

Agrium Conda Phosphate Operations

Agrium's Response to EPA's Letter Dated August 31, 2005

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Public disclosure of the information for which Agrium asserts this confidentiality claim would cause substantial harm to Agrium's competitive position. Furthermore, the information to which this claim applies does not constitute emission data, standards or limitations within the meaning of Clean Air Act §114(c), or other similar relevant federal and/or state provisions. This information includes commercial and/or financial-related information regarding confidential, commercially valuable plans, processes or devices. Because Agrium's business is highly competitive in nature, the disclosure of any such information would substantially harm Agrium's business position by depriving it of an advantage inherent in such information, and/or by providing Agrium's competitors with the ability to derive a benefit from such information to Agrium's detriment. For example, certain information to which this claim applies potentially could be used by Agrium's competitors to project Agrium's future production and/or pricing patterns, to gain insight into Agrium's proprietary process designs and/or production and marketing strategies, and/or to negatively influence public/consumer perceptions of Agrium and Agrium products.

In the event that EPA, or the Idaho Department of Environmental Quality ("IDEQ") receives a request for public disclosure of any information contained herein, Agrium requests that EPA and/or IDEQ notify Agrium immediately upon receiving any such request, notify Agrium of any determination by EPA and/or IDEQ with respect to the confidentiality of such information, and provide Agrium an opportunity to comment regarding any such EPA/IDEQ determination prior to the public disclosure of the requested information.

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	003145	003145		File Cover			File cover sheet, "Phos Acid Filters & Front End" (documents located at AGR-CBI 003145-003466)
AGR-CBI	003146	003146		File Cover			Sub-File cover sheet, "Start-Ups" (documents located at AGR-CBI 003146-003227)
AGR-CBI	003147	003150	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Seeding the Phos Reactor with 52% Acid
AGR-CBI	003151	003154	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Charging the Phos Reactor After Turn
AGR-CBI	003155	003158	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Start-up of 24-C After Turn Around
AGR-CBI	003159	003163	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Start-up for Belt Filter Systems After Turn
AGR-CBI	003164	003168	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of 24-C Filter
AGR-CBI	003169	003173	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Belt Filter Systems
AGR-CBI	003174	003179	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Pond Supply Pumps
AGR-CBI	003180	003184	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Phos Reactor
AGR-CBI	003185	003190	2/6/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Start-up of Phos Scrubber
AGR-CBI	003191	003194	6/26/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Normal Start-up of 24-C Horizontal feed pump
AGR-CBI	003195	003197	12/25/2002	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Gardner Denver Compressor
AGR-CBI	003198	003201	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Gyp Disposal Pumps
AGR-CBI	003202	003205	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Uncontaminated Pump
AGR-CBI	003206	003209	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Rock Slurry Pump
AGR-CBI	003210	003212	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Marble Pump
AGR-CBI	003213	003216	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Pond Return Pumps

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 CBI Document Production Index
 in Response to 8/31/05 EPA Info. Request

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	003217	003219	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of
AGR-CBI	003220	003222	2/26/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Process Sewer
AGR-CBI	003223	003227	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Start-up of Gyp Sump-Old Phos
AGR-CBI	003228	003228		File Cover			Sub-File cover sheet, "Shut Downs" (documents located at AGR-CBI 003228-003305)
AGR-CBI	003229	003232	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Rock Slurry Pump
AGR-CBI	003233	003237	2/24/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Phos Scrubber
AGR-CBI	003238	003240	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Pond Return Pumps
AGR-CBI	003241	003244	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Gyp Disposal System
AGR-CBI	003245	003247	2/26/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Process Sewer
AGR-CBI	003248	003251	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Phos Reactor
AGR-CBI	003252	003254	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of 24-C Filter
AGR-CBI	003255	003258	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Nash tank
AGR-CBI	003259	003261	6/26/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of 24-C Horizontal feed
AGR-CBI	003262	003264	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Pond Supply Pumps
AGR-CBI	003265	003268	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Uncontaminated Pump
AGR-CBI	003269	003271	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Gyp Sump (Old Phos)
AGR-CBI	003272	003274	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Marble Pump
AGR-CBI	003275	003278	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Belt Filtration System

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 CBI Document Production Index
 in Response to 8/31/05 EPA Info. Request

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	003279	003281	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Normal Shutdown of Nash tank
AGR-CBI	003282	003285	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Long Term Shutdown for Belt Filter
AGR-CBI	003286	003289	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Long Term Shutdown of 24-C
AGR-CBI	003290	003292	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Long Term Shutdown of Gyp Sump (Old
AGR-CBI	003293	003296	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Long Term Shutdown of Uncontaminated
AGR-CBI	003297	003299	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Long Term Shutdown of Marble Pump
AGR-CBI	003300	003305	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos (Front End and Filters), Long Term Reactor Shutdown

Phos Acid
Filters & Front End

AGR-CBI_003145

SUBJECT TO ALL APPLICABLE CONFIDENTIAL
BUSINESS INFORMATION PRIVILEGES

Start-ups

AGR-CBI_003146

SUBJECT TO ALL APPLICABLE CONFIDENTIAL
BUSINESS INFORMATION PRIVILEGES



Conda Phosphate Operations
Standard Operating Procedures

PHOS
(Front End and Filters)

Seeding the PHOS Reactor with 52% Acid

PHOS, start-up -01
02/07/03

Reviewed by: Richard Hymas

Date: 2/23/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the seeding of the PHOS Reactor with 52% acid.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be SPA Operator certified. Must be DCS Operator certified. Must be A-Filter Operator certified. Must be B-Filter certified. Must be B-Evap Operator certified.

Required Documents:

Tools and Equipment: Radio communication, 3" reinforced hoses, channel locks, bolts and gaskets.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 	<ul style="list-style-type: none"> • Chemical burn 	

Seeding the PHOS Reactor with 52% Acid

TASKS:

1. Aligning the car wash line to the reactor.
2. Filling the reactor with 52% acid.

Steps		Key Points	PPE/Hazards
1.	Verify that SPA has a car spotted.	At one of, or on both, car washes, and are ready to unload through the car wash line.	
2.	Align the car wash line at the distribution box.	This depends on whether or not the flow to the splitter box or the DB box is used.	
3.	Run a hose from the car wash line to #2 filtrate or #5 filtrate or #8 filtrate.	If using #5 & #8 filtrate lines, either hose up #5 and #8 filtrate lines to #6 and #9 filtrate tanks or simply let #5 and #8 filtrate tanks over flow to #6 and #9 filtrate tanks.	
4.	Verify that the filtrate tanks to be used are ready for service.	Communicate with DCS Operator.	
5.	Align valves from #2 or #6 or #9 filtrate through the Recycle Header to cells #1 and/or #2.		
6.	Verify that the bypass and drain valves are closed at the Recycle Header.		
7.	Verify that the wash line on top of cells #1 and/or #2 off of the Recycle Header are closed.		
8.	Verify that the automatics off the Recycle Header are open.		
9.	Contact the SPA Operator to transfer 52% acid.		
10.	Start the car wash pump.		
11.	Verify flow.	To filtrate tank of choice, #2 or #5 or #8.	

Seeding the PHOS Reactor with 52% Acid

NOTE

All breakers should be racked in and pumps should be ready for service.

12.	Start #2 or #6 or #9 when the level is at set point.	Check for abnormal noises and vibration in all pumps after starting.	
13.	Verify there are no leaks or breaks in transfer lines.		Chance of spill from blown or broken line.

NOTE

#2 and #6 and #9 filtrate pumps are veri-drives that run off of the level control. When car wash pump is shut down, the filtrate pump being used should be able to remain running.

14.	Stop the car wash pump when each car has been unloaded.	Repeat steps 9-12 until all seed cars are unloaded.	
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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____

Agrium

Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Charging the PHOS Reactor After Turn Around

PHOS, Turn Around Start-up-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/23/2005

Objective: To provide operating personnel with step- by- step instruction on how to perform the charging of the PHOS Reactor after turn around.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified. Must be B-Filter certified.

Required Documents: Procedures to be referred to: Normal Start-up of the PHOS Scrubber, Normal Start-up of the Front End Reactor, Normal Start-up of the Rock Slurry, Normal Start-up for Belt Filters, and Normal Start-up of the 24-C Filter, Normal Start-up of Seeding the Reactor With 52% Acid.

Tools and Equipment: Radio communication, channel locks, bolts, and gaskets.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear• Rubber gloves• Rubber boots	<ul style="list-style-type: none">• Thermal burns• Chemical burns	<ul style="list-style-type: none">• Acid spills need to be kept in containment area.

Charging the PHOS Reactor After Turn Around

TASKS:

1. Starting the rock slurry.
2. Starting sulfuric acid.
3. Building a level in the Reactor.
4. Starting agitation.
5. Starting flash coolers.
6. Directing water flow to the Reactor.

Steps		Key Points	PPE/Hazards
1.	Verify that all debris, scaffolding, ladders, and tools are removed from the cells of the Reactor.	This needs to be done before inspection doors are installed, and before Entry Permit Lockout and Isolation is completed.	
2.	Verify that all flanges and man-way doors are installed.	Verify with Maintenance, and field check.	
3.	Verify that electrical breakers and utilities systems are in service and ready for use.	Pond water, raw water.	
4.	Verify that no interference exists for mechanical operation.	Check with Maintenance, and field check.	
5.	Verify that the PHOS scrubber is in operation.	Refer to Normal Start-up of the PHOS Acid Scrubber.	
6.	Seed the Reactor with 52% acid.	Refer to Seeding the Reactor with 52% Acid.	

NOTE

All seed cars have been unloaded at this time. Start charging the Reactor with rock, sulfuric, and water.

7.	Start the pond water to the reactor by one of the following: 7.1 Using the wash water for the filters via the filtrate pumps to the recycle header. 7.2 Use barometric tank pond water through the recycle header.	Refer to Normal Start-up of Belt Filters and/or 24-C filter.	Pond water spills outside of containment area.
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Charging the PHOS Reactor After Turn Around

CAUTION

If the level is not high enough in the Reactor cells, a vortex could occur after the agitators are started.

8.	Start the agitators on Reactor cells #1 through #5.	Level should be close to half way between the top and bottom set of the agitator blades before starting the agitators.	
9.	Stop the pond water.	Controlled by DCS and Field Operator by radio communication.	
10.	Start the Rock Slurry pump.	Refer to Normal Start-up of the PHOS Rock Slurry pump. Controlled by DCS and Field Operator.	
11.	Start the sulfuric acid to compartment #1 and/or #2.	Refer to Normal Start-up of the Front End Reactor Steps #3-#7.	
12.	Sample slurry for specific gravity.	Field Operator will sample from cell #5.	
13.	Visually verify level in Reactor.	Install light in man-way hole.	

CAUTION

Do not mix pond water and sulfuric in the same mixing tee. This may cause a violent reaction. Put the pond water and the sulfuric in alternating cells from each other.

14.	Add pond water as needed to control the specific gravity.	In order to use recycle, this is only done until a particular filter is in service.	
15.	Verify that the Reactor level is over the discharge piping of the flash coolers in cell #1.	This will need to be done by Field Operator. There is no level indication on Reactor.	
16.	Start the flash coolers.	Refer to Normal Start-up of the Front End	

Charging the PHOS Reactor After Turn Around

		Reactor.	
17.	Start #6 and #7 cell agitators when level dictates.	Refer to step #8 Key Point. Visually verified by field.	
18.	Start filtration as needed.	Refer to Normal Start-up of Belt Filters and Normal Start-up of 24-C Filter.	

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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

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AGR-CBI_003154

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Start-up of the 24-C After Turn Around

PHOS, Startup-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/23/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the start-up of the 24-C after turn around.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents: Procedures for the Normal Start-up of the 24-C Filter, and Normal Start-up of the Gyp System.

Tools and Equipment: Radio communication, channel locks, hammers, nuts and bolts, gaskets, and flashlight.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Thermal burns• Pinch points• Over pressuring lines	<ul style="list-style-type: none">• Acid spills• Acid needs to be kept in containment area.

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AGR-CBI_003155

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Start-up of the 24-C After Turn Around

<ul style="list-style-type: none"> • Safety toe footwear. 		
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TASKS:

1. Verify that all equipment on the 24-C is ready for service.

NOTE

Verify all equipment associated with the 24-C filter has been turned over to Operations and all Isolation/Lockouts have been set up to run.

Before canceling Confined Space Permit, make sure that all tank inspections are complet.

	Steps	Key Points	PPE/Hazards
1.	Verify that all pumps pertaining to the 24-C filter are in place and are ready for service.		
2.	Verify that the vacuum system has been assembled.	And is ready for service.	
3.	Verify that all the knock out pots and down legs have been cleaned, and reassembled.	And ready for service	
4.	Verify that all of the discharge piping associated with the filtrate pumps have been assembled and ready for service.		
5.	Verify that the gyp system is ready for service.	Refer to Normal Start-up of the Gyp System.	
6.	Verify that the blanks are on all four filtrate tanks.		
7.	Verify that all the cloths are on the filter.	And ready for service	
8.	Verify that all of the hoses area installed from filter to center valve.	And ready for service	
9.	Verify that the center valve is down all the way.	And condensate valves are closed.	
10.	Verify that the guards have been installed on the outside of the filter.		
11.	Verify that all of the feed and floc lines are assembled.	And ready for service.	
12.	Verify that the 24-C filter area is clean and clear of tools and debris.		

Start-up of the 24-C After Turn Around

13.	Unlock all of the breakers pertaining to the 24-C filter.		
14.	Verify that there is steam available to the wash water.		
15.	Start the water to the vacuum pumps.		
16.	Open the pond water valve to #4 filtrate tank.	This will allow the filling of the filtrate tanks with water. 3" valve is on top of #4 filtrate.	
17.	Close the pond water to #4 filtrate Tank.	When filtrate Tanks #1 through #4 is full. 3" valve is on top of #4 filtrate. Field Operator.	
18.	Start the filtrate agitators #1 through #4.	After all tanks are full.	
19.	Open the #4 filtrate to strong acid wash box.		
20.	Verify that the greaser is on and is working properly.		
21.	Inspect the area before starting filter.		
22.	Sound the siren.		
23.	Start the filter drive.	Refer to Normal Start-up of the 24-C Filter.	
24.	Charge the floc lines with floc.	This should help the filter come on better. DCS Operator.	

NOTE

If applicable to finish putting the filter in service, refer to the Normal Start-up of the 24-C filter.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Start-up for the Belt Filter Systems After Turn Around

PHOS, Startup-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/23/2005

Objective: To provide operating personnel with step by step instruction on how to perform the start-up of the belt filter systems after turn around.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents: Procedures for: Normal Start-up of the Belt Filters Systems, Procedures for the Normal Start-up of the PHOS Acid Fume Scrubber, Start-up for the Gyp Slurry System, and Start-up for the Incoming Pond Supply, and Charging the Floc System.

Tools and Equipment: Radio communications.

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AGR-CBI_003159

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Start-up for the Belt Filter Systems After Turn Around

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 		

TASKS:

1. Prepare filter for service.

NOTE

Before canceling Confined Space Permit, complete steps #1 and #2.
Verify that Maintenance has completed their work.

Steps		Key Points	PPE/Hazards
1.	Verify that all debris is removed from the filtrate tanks.		
2.	Verify that all scaffolding, ladders, and tools are removed from filtrate tanks.		
3.	Verify that all flanges are made up with correct gasket and that all bolts are tight.		
4.	Verify that electrical breakers are in service and ready for use.		
5.	Verify that all utilities systems are in service.		
6.	Verify that no interference exists for mechanical operation.		
7.	Verify that the pond water and raw water strainers are clean.		
8.	Verify that all man-way doors are closed and fastened tightly.		

NOTE

All heat tapes and steam tracing are activated and insulated to prevent freezing in winter months.

Start-up for the Belt Filter Systems After Turn Around

9.	Verify that the PHOS acid fume scrubber is in operation.	Refer to Normal Start-up of PHOS Acid Fume Scrubber.	
10.	Verify that the steam is open to the vacuum pan.		
11.	Verify that the Gyp Disposal system is in service.	Refer to Start-up for the Gyp Slurry System.	
12.	Verify that the pre-condensers are clean and in service.	Refer to Start-up for the Incoming Pond Supply After Turn Around.	
13.	Verify that the Cake Wash pumps are ready and lined up to the filters and Cloth Wash pumps, and that all bypass valves are closed on #1 belt filter and/or #2 belt filter.		
14.	Start the water to the atomizer, the vacuum pan lubrication system, and the slid deck.		
15.	Verify that all interlocks on filter drive for #1 belt and/or #2 belt filter drive.	Refer to Normal Start-up for Filtration Systems.	
16.	Start the belt filter support fan.		
17.	Start the belt drive.		

NOTE

Verify that the belt and cloth are turning freely and that every thing looks and sounds all right mechanically.

18.	Fill all filtrate tanks with cake wash water.	Only if applicable. They may already be full from seed acid.	
19.	Start the Cake Wash pump.	Set wash water at desired set point.	
20.	Start the Cloth Wash pump.	To verify that system is ok.	
21.	Start #7 and #10 Filtrate pumps.	When desired set point is reached.	

Start-up for the Belt Filter Systems After Turn Around

22.	Shut down cake wash pump.	When filtrate tanks 5, 6, and 7 and/or 8, 9, and 10 are full.	
23.	Cloth wash pump.		
24.	Start the agitators on all filtrate tanks	5, 6, and 7 of the #1 belt filter and/or 8, 9, 10 of the #2 belt filter. Could already be running, from seeding the reactor.	

NOTE

Field Operator needs to verify that the sluice water system is working.

25.	Start the sluice water.		
26.	Verify that all valves are open to the gyp chute and verify flow.	On #1 belt filter and/or #2 belt filter. DCS should have a permit (red or green light).	
27.	Verify that the floc lines and pumps have been reassembled and have a mixed batch of floc.	Refer to Charging the Floc System.	
28.	Charge the floc lines with floc.	This should help the filter come on better. DCS Operator.	

NOTE

If applicable to finish putting the filter in service, refer to the Normal Start-up of the Belt Filter Systems.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS
(Front End and Filters)

Normal Start-up of the 24-C Filter

PHOS, Start-up-01
02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal start-up of the 24-C Filter.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents: Procedure for Punching the Spray Bar, Normal start up of the 24-c Horizontal feed pump.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection 	<ul style="list-style-type: none"> • Steam burns • Chemical burns 	<ul style="list-style-type: none"> • Pond water, filtered acid, and filter feed need to be kept in containment area.

Normal Start-up of the 24-C Filter

• Safety toe footwear		
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TASKS:

1. Start the filter drive.
2. Start the wash water.
3. Start the feed.

	Steps	Key Points	PPE/Hazards
1.	Verify that center valve is down and greaser is on.		
2.	Walk around the filter to verify that all chains are up and the filter is safe to start.		
3.	Set all wash valves to run.	Strong acid, midnight, last wash. To begin, both strong acid valves ¼ open.	
4.	Sound the start-up siren.	Sound the siren at least 15 sec. Wait 15 sec. Before starting the drive.	
5.	Start the filter drive. Increase the filter drive speed to desired set point.	Listen for improper sounds, and watch all pans for proper operation.	
6.	Set #1 filtrate to go into the product side of splitter box.	All discharge valves are open and all wash valves are closed.	
7.	Verify that the primary and cake dry sprays are in service.		
8.	Start the steam in to the discharge blower.	The steam is used to heat the line to reduce scaling. Too much steam can defeat the purpose of the discharge blower.	
9.	Verify that the spray bar is in service.	PSI is apprx. 80-100 PSI. Refer to Punching Spray Bar Procedure.	

Normal Start-up of the 24-C Filter

NOTE

When starting the wash water to the filter use minimal flow until the #2 filtrate pump is started. This will help keep the filtrate tanks from running over.

10.	Start the wash water to the filter.	Use cake wash tank or west dilution cooler, depending on system of use.	
11.	Add steam to wash water.	120°-140°.	
12.	Verify that the feed pump is aliened to the filter.		
13.	Verify that the recycle header is set back to normal operation.		
14.	Verify that #2 filtrate is aliened to the recycle header.		
15.	Verify that #2 filtrate automatic valve is set in automatic control, instead of manual.	#2 filtrate has to be in automatic control for the valve to open after the pump is started.	
16.	Start #1 and #2 filtrate pumps.	Verify that #2 filtrates automatic at the recycle header opens.	
17.	Start the feed to the filter. Refer to the 24-C Horizontal feed pump start up procedure.	Start the feed pump in manual under 50% pump speed until feed flow is close to desired set point.	

NOTE

If floc line has been blown out with air, it may be beneficial to start the floc sooner, up to 5 minutes before starting feed.

18.	Start the floc to 24-C feed line.	The floc should be started the same time as the feed.	
19.	Start the cake discharge blower.		
20.	Start the primary vacuum pump.		

Normal Start-up of the 24-C Filter

21.	Start the cake dry vacuum pump.		
22.	Start #4 filtrate when vacuum has been established.	This helps keep #4 filtrate tank from going empty. Done in the field.	
23.	After filter is running, close over flow off of #4 filtrate tank.	Keeps tanks from over flowing until #1 and #2 are running.	



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Start-up of the Belt Filter Systems

PHOS, Startup-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step by step instruction on how to perform the normal start-up of the belt filter systems.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be B-Filter certified.

Required Documents:

Tools and Equipment: Radio communication,

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Cavitations of pumps or agitators• Thermal burns• Pinch points	<ul style="list-style-type: none">• Acid spills• Acid needs to be kept in containment area.

Page 1 of 5

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Normal Start-up of the Belt Filter Systems

<ul style="list-style-type: none"> • Safety toe footwear. 		
--------------------------------------------------------------------------	--	--

TASKS:

1. Put the belt filter in service.

<p>NOTE</p> <p>For a normal start-up, it is assumed that the Gyp Disposal System is in service and all filtration tanks are at normal level with agitators running.</p>

	Steps	Key Points	PPE/Hazards
1.	Verify that #5 filtrate product line and/or #8 filtrate product line is to the clarifier.	B-Filter Field Operator.	

<p>NOTE</p> <p>It is important that the automatic at the recycle header is in auto.</p>

2.	Verify that #6 filtrate and/or #9 filtrate discharge piping is aligned through the recycle header.		
3.	Verify that the wash valves are closed on #6 and/or #9 filtrate pumps at the recycle header.		
4.	Start the water to the air deck atomizer, the vacuum pan lubrication system and the slide deck by: 4.1 Opening the isolation valve Before the strainer.	DCS can verify all flow indications.	
5.	Start the belt filter support fan.	For the #1 belt filter and/or the #2 belt filter.	
6.	Verify that the steam is opened to the vacuum pan.		

<p>CAUTION</p> <p>During long storage periods, the belt may stick to the slide deck. This can be checked by pushing a flat bar between the slide and the belt.</p>

Normal Start-up of the Belt Filter Systems

CAUTION

DO NOT start the extractor while the vacuum system is on. Under no circumstances should the extractor be started while the vacuum pump is operating. Starting the drive with the vacuum on will cause extreme stress on the belt(s), resulting in belt damage or breakage. To prevent accidental starting, interlock the pump with the filter starter.

7.	Verify that the floor sprays are in service.		
8.	Walk around the filter to verify that it is safe to start.		

NOTE

Check the cloth and belt for debris and tools before starting the drive.

9.	Start the filter drive	Manual at a slower veri-drive speed. then switch to auto.	
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NOTE

Test both flag pulls trips while the filter is running. Interlocks can be checked while filter is down. This will save on excessive wear of equipment.

	Steps	Key Points	PPE/Hazards
10.	Check all interlocks: 10.1 Belt misalignment. 10.2 Cloth misalignment 10.3 Upper & lower take-up roller. 10.4 Alignment actuator.	Alignment actuator to verify that it is operating correctly	

NOTE

Any adjustments required for the cloth and the belt or the vacuum deck and the pan lube systems should be made before proceeding with these instructions.

Check for vibrations and any abnormal noises after a pump is started.

If both belt filters are to be started, open the valve to the filter that is being put in to service.

11.	Start up the High Pressure Cloth Wash pump.		
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Normal Start-up of the Belt Filter Systems

12.	Start the Cake Wash pump.	For #1 belt filter and/or #2 belt filter. Adjust wash water to desired set point.	
13.	Start the Cloth Wash pump.	For #1 belt filter and/or for #2 belt filter.	
14.	Start the strong acid wash filtrate pumps.	#7 and/or #10 filtrate pumps.	

NOTE
Field Operator needs to visually check to avoid chance of plugging the gyp chute.

15.	Verify that the sluice water is in service.	DCS has an indicator light.	
16.	Verify that the hand control discharge valves on the feed lines are open	#1 belt filter and/or #2 belt filter	
17.	Verify that the hand control flush valves are closed.	#1 belt filter and/or #2 belt filter	

NOTE
Field Operator needs to check for vibrations and any abnormal noises after a pump is started.

18.	Start Filter Feed pump.	Set the veri-drive in manual at 50% or less. Set to the desired feed rate.	
19.	Start the Filter Floc		
20.	Start the vacuum pump.	Refer to above note.	
21.	Adjust cake wash water to the desired filtering GPM.		
22.	Start the Filtrate pumps.	#5, and #6, and/or #8, and #9, Filtrate pumps	
23.	Inspect the filter generally for operation.		
24.	Increase the filter rate as filtration allows.		



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Start-up of Pond supply Pumps

PHOS, Normal Start-up-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step -by -step instruction on how to perform the Normal Start-up and/or After Turn Around Start-up of the Pond Supply pumps.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be a certified Shifter of Upgrade Lead man.

Required Documents: Refer to the Reactor, Filters, Gyp Disposal PHOS Scrubber, Return Pond Water System, and Evaporators Normal Start-up Procedures.

Tools and Equipment: Radio communication, valve wrench, cell phone, hydraulic operated valves, and truck.
(Plenty of gas)

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Normal Start-up of Pond Supply Pumps

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 	<ul style="list-style-type: none"> • Rupturing pond water lines • High voltage starters • Possibility of diluted acid burn from pond water 	<ul style="list-style-type: none"> • Contain any pond water spills • Proper reporting of a pond water spill.

TASKS:

1. Open and close hydraulic valves.
2. Open and close 2" bleed valves.
3. Open and close gate valves.
4. Starting starters (motor & breaker)
5. Radio or cell phone communication.
6. Checking lines and flanges for leaks.
7. Verifying amps on motors.
8. Checking pump packings on pumps.

NOTE

Starting of the two Pond Supply pumps and the secondary Pond Supply pumps are done in the field by Shifter and only through radio communication with the rest of the plant or by cell phone to the DCS Operator. DCS Operator has "stop only" capabilities.

If starting up after Turn Around, verify that all blanks, bleeds, and lockout/isolations have been taken care of to bring Pond Supply pumps in service.

Steps	Key Points	PPE/Hazards
1. Open main condenser valves on A, B, C, 8 Evaps at least ½ way.	Have DCS Operator open main condenser automatic valves. Set controllers in manual and open 50%.	
2. Open the suction and discharge valves on all four booster pumps.	Have B-Filter Operator set this up.	

Normal Start-up of Pond Supply Pumps

NOTE

By opening the valve between the discharges of the booster pump header to the return pump header will relieve most of the initial line stress and./or shock of the pond supply start-up.

Opening all flow control valves will allow all air to escape from the pond lines. Close valves as needed if equipment is not ready for service, After the air is bleed out.

3.	Open the pond supply to pond return header junction valve.	Have B-Filter Operator set this up. (Bypass valve on death row)	
4.	Open pond water automatic valve to PHOS scrubber.	Have DCS Operator open this automatic valve. Set controller in manual and open 25%.	
5.	Open pond water automatic valves to both barometric condensers.	Have DCS Operator open these automatic valves. Set controllers in manual and open 50%.	
6.	Open pond water automatic valves to both pre-condensers.	Have DCS Operator open these automatic valves. Set controllers in manual and open 20%.	
7.	Open pond water make-up line to Gyp Disposal tank automatic valve.	Have DCS Operator open this automatic valve. Set controller in manual and open 20%.	

NOTE

Need to have the A-Filter Operator in the filter building ready to start the barometric return pump when the pond water hits the building and the B-Filter Operator standing by on Death Row to start return pumps as the pond water hits the north seal tank. Everyone needs to be ready to avoid a pond spill.

8.	Check secondary pond supply pump discharge valve.	Shifter needs to make sure this valve is shut before starting either one of the primary pond supply pumps, or starting the secondary pump.	
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Normal Start-up of Pond Supply Pumps

NOTE

Before starting any of the three pond supply pumps, contact the DCS Operator and Field Operators to verify that everyone is ready for water. This can be done by radio or cell phone communication.

9.	Start the secondary pond supply pump.	Shifter will start the pump from the field and slowly open the discharge valve until it is all of the way open.	
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NOTE

Verify with the DCS Operator and Field Operators to make sure they are getting pond water. Make sure they know it is on the way, and then go to the primary pumps.

10.	Open the east pond supply pump hydraulic discharge valve.	Shifter will hook up the hydraulic controller to the east discharge valve and open ¼ open.	
11.	Open the east pond supply pump discharge 2" bleed off valve.	Shifter will open the 2" bleed-off valve about ½ way open going to the sump.	

NOTE

Verify that PHOS is ready for more pond water and that they do have water. If ready for more water. Communicate through DCS before starting supply pump.

12.	Start east pond supply pump.		
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NOTE

When starting the booster pumps, make sure not to close too many discharge valves at one time, causing the suction header of the booster pumps to over pressure.

Pond **return** pumps should be brought on in sequence to the pond booster pumps

Refer to normal start up of the pond return pumps.

Normal Start-up of Pond Supply Pumps

13.	Bring on booster pumps.	Discharge valve will need to be closed. Verify that the pump is not spinning backwards before starting.	
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CAUTION

Over-opening of these hydraulic valves can ruin them. Use the shaft as a marking as how far to open. Don't open past where the valve shaft is shiny. The same applies when closing. Do not over-close the valve.

14.	Slowly open the east pond supply discharge valve.	Shifter will open the discharge valve all of the way.	
15.	Close the 2" bleed valve going to the sump.	Shifter will shut this 2" valve to where there is about 10 GPM always bleeding to the sump to prevent freeze-ups.	
16.	Verify that packing gland on the east pump is operating properly.		
17.	Verify with DCS to see if they are ready for west pond supply pump.		
18.	Start west pond supply pump.	Repeat steps #11-15 to bring on the west supply pump.	

NOTE

Once all three pond supply pumps are in service, Shifter needs to drive down and check the pond supply and return lines to and from PHOS for leaking flanges or blown line.



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Start-up of the PHOS Reactor

PHOS, Normal Start-up-01 02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step- by -step instruction on how to perform the normal start-up of the PHOS Reactor.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified.

Required Documents: Procedures for Normal Start-up of the: Rock Slurry PHOS Scrubber Uncontaminated Tank.

Tools and Equipment: Grease gun, radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 	Thermal burns, chemical burns, Equipment damage, sulfuric acid is vary corrosive and van cause sever burns.	Sulfuric acid, reactor slurry, and pond water need to be kept contained.

Normal start-up of the Phos Reactor

TASKS:

1. Verify the equipment is energized and ready for service.
2. Start the Rock Slurry pump.
3. Start the Sulfuric pump.
4. Start the Flash Cooler Vacuum pump seal water.
5. Start the Flash cooler Circulation pump seal water.
6. Start the Flash Cooler Vacuum pumps.
7. Start the Flash Cooler Circulations pumps.
8. Grease the 36" valve.

NOTE

For a normal start-up, the tanks have a level in them and agitators are running. The filters are down, but ready to run, and the gyp disposal system is in service.

The Reactor level will dictate whether to bring the filters or the rock and acid on first.

The Reactor temperature will dictate whether to bring on both flash coolers at once.

	Steps	Key Points	PPE/Hazards
1.	Verify that electrical breakers and utilities systems are in service and ready for use.	Pond water, raw water, plant air, instrument air.	
2.	Verify the PHOS scrubber is running.	Refer to normal start PHOS scrubber.	

NOTE

The Sulfuric pump may already be running if Granulation is running 16-20-0.

The Sulfuric pump is set up to shut "off" if DAP is using less than 10 gallons per minute when the PHOS Rock Slurry flow is under 400 pounds of rock per minute.

Notify the Wash Plant and the North Sulfuric Plant when starting the Reactor.

3.	Start the Rock Slurry pump.	Refer to normal start up of Rock Slurry pumps.	
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Normal start-up of the Phos Reactor

CAUTION

It is very important to set both sulfuric valves on cell #1 and #2 in manual at 25% to 50%. This will help bleed the air when the pump starts and will keep from deadheading the line.

Maintenance personnel or contractors should be cleared of sulfuric lines area any time that the Sulfuric pump is started.

Any time the Sulfuric pump is started, operators should be in the field in the various areas along the line to make sure that the line does not leak once the pump is started. If the line leaks, shut the pump down and barricade area of leak. Have maintenance repair leak.

4.	Verify that all manual sulfuric valves are open on cell #1 and #2.		
5.	Verify that all the bleeds are closed, on the sulfuric lines to cell #1 and #2.		Rubber gloves.
6.	Set the sulfuric automatic valves in manual at 25%-50% open.	On cell #2 and #3.	

NOTE

Notify the north sulfuric operator when ready to start the Sulfuric pump.

7.	Start the Sulfuric pump.	The North plant operator will start the pump.	
8.	Cut back the flash cooler barometric condensers.	So as not to pull any vacuum until ready.	

NOTE

Uncontaminated tank needs to be in-service.

9.	Verify that the seal water automatic valves are open on the flash cooler vacuum pumps.	It is not necessary to do this on both pumps if only bringing on one pump.	
10.	Open the automatic vacuum brake valve all the way.	This keeps from pulling too much vacuum until ready.	
11.	Start the vacuum pump or pumps.		

Normal start-up of the Phos Reactor

12.	Verify that there is seal water on the flash cooler circ pumps.	No more that 10 gallons of water unless told otherwise.	
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CAUTION

It is very important to bump check the Flash Coolers Circulation pump in the field before opening the 36" valve. This verifies that the impeller is free of build up.

13.	Grease the 36" valve before opening or closing.	This is to save wear on the inserts in the valve.	
14.	Open the 36" Clarkston suction valve on the flash cooler to be started.	Valve controls are located by the recycle header.	
15.	Put the clarifier under flows back to the reactor.		
16.	Adjust the barometric condensers flows and the automatic vacuum breaker as needed.	To control the Reactor temperature.	
17.	Start the filtration system.	If not already started.	

Training Notes:

- 1. Starting the sulfuric acid should be treated with utmost respect.**
- 2. Starting the Flash Coolers this way may not always be possible.**
- 3. If filtration system is brought on last, it may be necessary to start a recycle pump and wash water.**



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(FRONT END AND FILTERS)

START-UP OF THE PHOS SCRUBBER

PHOS-Start-up-01

02/06/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform normal start-up of the Phosphoric Acid Scrubber.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. B- Filter qualified.

Required Documents: Any time the phos scrubber is shutdown there will need to be a DEQ report turned in, with in 24 HRS.

Tools and Equipment: N/A

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat, Safety toe foot wears,• Safety glasses,• Rubber gloves,• Work gloves, and• Hearing protection.	Chemical burns from the pond water.	<ul style="list-style-type: none">• Pond water needs to be kept contained,• DEQ will need to be filled out if scrubber is down. With in 24 HRS.

Page 1 of 6

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Normal start-up of the Phos Scrubber.

TASKS:

1. Starting pond water to the scrubber.
2. Starting raw water to the scrubber.
3. Starting the Scrubber pond return pump.
4. Starting the Scrubber circulation pumps.
5. Starting the scrubber fan.

NOTE

The Scrubber has to be operating before the rest of the production area can be put into production. If the scrubber were not put into operation first, emissions would be put out into the atmosphere and a fine could occur from EPA.

Steps		Key Points	PPE/Hazards
1.	Verify that all 3" valves on each pad section are open.	There are 3 pads to each section and two sets of 4 sprays per pad	
2.	Open the butterfly valve on the 3 rd Stage circulation pump discharge line 25%		
3.	Verify that all the seal water valves are open to the scrubber pumps	Blow down, void, 1st, 2nd, and 3rd, stage pumps.	

NOTE

The raw water source to the Scrubber is from the uncontaminated tank, You can tie in to the incoming raw water supply if needed to start the scrubber, and the uncontaminated tank is not in-service.

4.	Open raw water automatic valve to the 3 rd stage pump		
5.	Open main supply valve to the seals on each pump.	Verify that there is flow.	

6.	Open the valve to the raw water head tank.	This valve is usually open and is	
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Normal start-up of the Phos Scrubber.

		controlled off of a float valve at the head tank.	
7.	Verify that the manual valve coming from the head tank is open.	The automatic on this line should open every 7.5 minutes. For 15 seconds.	

NOTE
The pond water header that is servicing the scrubber is tied in to the same header that services the #1 flash cooler and the gy tank.

8.	Set the pond water inlet automatic at 1000 gpm.	You may have start out in manual so you don't lose pond pressure.	
9.	Start the pond water to the Scrubber.	This will start the pond water to the 3 rd Stage scrubber section	

NOTE
To start any of the scrubber pumps open the suction valve, close or restrict the discharge valve then start the pump.

10.	Verify that the level control valve is in auto	Once level increases the valve will open.	
11.	Start the Blow down pump.	Refer to note above.	

NOTE
Once you have completed a loop with the pond water through the scrubber and returned to the north seal tank, and the level in the scrubber is happy, start the 1st, 2nd, 3rd, and the void pumps. All of the manual flow control valves on the re-circulation pumps should be open on top of the scrubber, if not sure, verify.

12.	Start the 1 st stage pump.	Refer to above note on how to start the pumps.	
-----	---------------------------------------	------------------------------------------------	--

Normal start-up of the Phos Scrubber.

13.	Start the 2 nd stage pump.	Refer to above note on how to start the pumps.	
14.	Start the 3 rd stage pump.	Refer to above note on how to start the pumps.	
15.	Start the void pump.	Refer to above note on how to start the pumps.	
16.	Verify that there is pond water in the two seal pots	One seal pot is in the old ball mill and the other is by the scrubber stack.	
17.	Close the louvers on the scrubber fan	The Scrubber will not start if they are open.	

CAUTION

Fan amps should not exceed 133 AMPS.

18.	Start the scrubber fan	Watch all control limits on the DCS for any problems. To also visually verify in the field.	
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NOTE

It is recommended to run the louvers at 45% or more to keep from starving the fan.
This will not always be possible.

19.	Adjust louvers as need.	The dampener should be set to control the Differential pressure.	
20.	Verify that all of the fume dampers are open in the ductwork.		

Normal start-up of the Phos Scrubber.

NOTE

Here is a list of all the equipment areas the scrubber ducting is plumed to;

- 24-C filtrate tanks.
- 24-C filter& Gyp chute
- Belt filters filtrate tanks.
- All cells on the Reactor.
- Gyp sump.
- Gyp tank.
- North seal tank.
- Tank 12
- DB Box.
- #1 LGS.
- All of Grade control.

Training Notes:

1. **This procedure is based on the scrubber is shutdown and brought back on without a lot of irregular valve changes.**

Normal start-up of the Phos Scrubber.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

Normal start up of the 24-C Horizontal feed pump.

PHOS-Startup-01

06/26/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform a Normal start up of the 24-C feed pump

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator, but coordinated through the field operators first and accordingly.

Required Documents: Normal start up of the 24-C filter.

Tools and Equipment: Radio communication, Hydraulic Unit.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety Glasses • Work Gloves • Hearing Protection • Safety Toe Footwear 	<ul style="list-style-type: none"> • Thermal burns • Chemical burns 	<ul style="list-style-type: none"> • Pond water, filtered acid, and filter feed need to be kept in containment area.

Normal start up of the 24-C Horizontal Feed pump

TASKS:

1. Start the feed.
2. Verify valves are set for proper operation

NOTE

The suction piping will tie in to cell #4 for turn around use only.

There will be a spec blind installed.

A spec blind looks like a figure 8, only one side is to pan cake and the other side for service, this is so you can tell if the line is pan caked for isolation or ready for service.

Steps		Key Points	PPE/Hazards
1.	Verify that the spec blind is installed correctly.	Should have an open hole on the spec blind when feed pump is in normal operation.	
2.	Verify that the 6" flush valve is in the closed position.	This valve is located on the suction side of the pump.	

NOTE

There are two isolation valves for the suction of the 24-C Horizontal feed pump off of cell #7.

These valves are classified as A valve, and B valve.

The A valve is a manual valve that is just off of the digester cell #7, this valve is to be closed only for an emergency, or to repair the B valve, this is to minimize damaging the A valve.

The B valve is a hydraulic actuated Clarkston automatic valve that will be used to isolate the feed pump for wash and repair.

3.	Verify that the drain valve on the suction piping is closed.		
4.	Verify that the drain valve on the discharge side of the 24-C Horizontal feed pump is closed.		
5.	Verify that the spec blind is in place correctly on the existing 24-C feed pump piping.	Refer to note above on spec blinds.	
6.	Verify that the A valve is open.	This valve should only be closed for emergencies or to repair the B valve.	

Normal start up of the 24-C Horizontal Feed pump

CAUTION

When the A valve is open there will be energy to the B valve. Before opening the B valve, the wash valve needs to be closed and all drain valves closed.

When opening the B valve the slurry in cell #7 flows through the pump and through the discharge line until it is equalized with the level in cell #7.

7.	Open the B valve.	Use the hydraulic unit..	
8.	Communicate with DCS that the 24-C Horizontal feed pump is ready for service.	Refer to normal start up of the 24-C filter.	

NOTE

If the raw water pressure drops below 25# psi the pump will automatically shut down.

Training Notes:

1. This is a new system and there may be things missed. Operators will need to use common sense and their best judgment if there are steps missed on this procedure. And fill out a request of change form.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

GARDNER DENVER COMPRESSOR

PHOS-Startup-01

12/25/02

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step by step instruction on how to perform start-up of the Gardner Denver compressor.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents:

Tools and Equipment: air

PPE	Hazards	Environmental Considerations
Any Personal Protective Equipment that may need to be worn during this procedure.	Any safety or environmental hazards that may occur during this procedure.	Any environmental concerns needed within this procedure.

Title of the procedure being discussed

Steps		Key Points	PPE/Hazards
1.	Verify discharge valve is closed.		
2.	Verify oil-cooling valves are open.		
3.	Start compressor.	Build pressure in tank to 60 PSI.	
4.	Slowly start opening discharge valve.	Maintain 60 PSI in tank.	
5.	Wait until all lines are pressured up.		
6.	Once lines are pressured up, open discharge valve all the way.		

Title of the procedure being discussed

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Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures PHOS (Front End and Filters)

Normal Start-up of the Gyp Disposal Pumps

PHOS, Normal Start-up-01 02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step- by -step instruction on how to perform the normal start-up of the Gyp Disposal System.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified. Must be B-Filter certified.

Required Documents: Procedures for Normal Start-up of the Gyp Sump Pump.
Procedures for Normal Start-up of the Incoming Pond Supply.

Tools and Equipment: Radio communication

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection 	<ul style="list-style-type: none"> • Thermal Burns • Chemical Burns • Equipment Damage • Gyp Slurry in eyes 	<ul style="list-style-type: none"> • Keep gyp slurry in containment area. • Gyp slurry is corrosive.

Page 1 of 4

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Normal Start-up of the Gyp Disposal Pumps

<ul style="list-style-type: none"> • Safety toe footwear. 		
--------------------------------------------------------------------------	--	--

TASKS:

1. Start up of gyp system.
2. Prepare pump to be used.
3. Start the seal water.
4. Start make- up water to gyp tank.

NOTE

A Field Operator needs to be at disposal pumps to perform this procedure. The barometric condenser pump should all ready be in-service, if not it will need to be in service.

	Steps	Key Points	PPE/Hazards
1.	Verify the incoming pond system is in-service.	DCS Operator. Refer to Normal Start-up of the Incoming Pond Supply.	
2.	Verify there is a level in the gyp tank.	DCS Operator.	
3.	Verify level controller is on automatic	DCS Operator. Once gyp pump is started and the level starts dropping, it will start sending make-up water.	

NOTE

On a normal start-up, the valves on the seal water booster pumps should already be open.

4.	Open seal water valve.	By Field Operator.	
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NOTE

If the line between the suction valve and the discharge valve is full of slurry, you may not get a permit on the seal water. It may be necessary to drain the line or, start the pump.

5.	Start the seal water booster pumps.	By DCS and Field Operators.	
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Normal Start-up of the Gyp Disposal Pumps

6.	Verify that there is seal water to the pump.	By DCS and Field Operator.	
7.	Verify that the suction valve is set on automatic.	DCS Operator. This will verify that the valve will open before the pump starts.	

NOTE

After starting the Gyp Disposal pump, the DCS Operator may have to put the level controller in manual and open the valves to keep the tank from emptying.

If the B-valve is set up above 25% to control level, it is important to set it back to at least 25% before the filters are put in service.

Too also, it will be important to watch the level in the barometric condenser tank.

8.	Start the Gyp Disposal Pump.	DCS Operator controlled.	
9.	Verify that the suction valve opens.	By DCS and Field Operators. The suction valve should open before the pump actually starts.	
10.	Verify the discharge valve opens.	By DCS and Field Operators. The discharge valve should open after the pump starts.	
11.	Verify that the suction and discharge valves quit leaking slurry out of the bottom of the Clarkston valves.	By Field Operator.	
12.	Verify the amps on the Gyp Disposal pump is at normal operation.		
13.	Verify that the seal is clean and has a permit.	By DCS and Field Operators.	
14.	Start the Gyp Sump pump.	Done by B-Filter Operator. Refer to Normal Start-up of the Gyp Sump pump.	
15.	Notify PPA to send cake slurry.		

Normal Start-up of the Gyp Disposal Pumps

16.	Start filtration as needed.		
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Conda Phosphate Operations

**OPERATIONS PROCEDURE
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Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Start-up of the Uncontaminated Pump

PHOS, Start-up-01
02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step- by- step instruction on how to perform start-up of the uncontaminated pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents: Procedures to be used: Start-up of the filter vacuum pumps
Start-up of the flash cooler vacuum pumps

Tools and Equipment: Radio Communication

Page 1 of 4

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Normal Start-up of the Uncontaminated Pump

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear 		

TASKS:

1. Start the uncontaminated pump.
2. Open close valves.

Steps	Key Points	PPE/Hazards
1. Verify manual suction and discharge valves are open.		
2. Verify that the drain valve on the suction piping is closed.		
3. Verify that the Nash tank is ready for water.		

NOTE

The supply line to the floc mix tank also supplies raw water to the PHOS scrubber.

4. Verify the floc mix tank is ready for water.	If not, close the manual supply valve located on top of the tank.	
5. Verify the PHOS scrubber is ready for water.	If not, close the manual supply valve located on top of #5 filtrate tank.	
6. Verify the tank level has a level.		

Normal Start-up of the Uncontaminated Pump

NOTE

The filter vacuum pumps and flash cooler vacuum pump are the supply water to the uncontaminated pump.

7.	Verify there is enough supply water to start the uncontaminated pump.	The level control runs off of the pump discharge automatically. DO NOT deadhead pump, if possible.	
8.	Start the uncontaminated pump.	Can be started from DCS or the field. DCS need to be notified if started from the field. Field operator should be by the pump when started so he can watch for problems.	



Conda Phosphate Operations

**OPERATIONS PROCEDURE
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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Start-up of the Rock Slurry Pump

PHOS, Normal Start-up-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step- by- step instruction on how to perform the normal start-up of the Rock Slurry pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified.

Required Documents:

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Over pressuring a line.• Cavitation of a pump.	

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Normal Start-up of the Rock Slurry Pump

<ul style="list-style-type: none"> • Safety toe footwear. 		
--------------------------------------------------------------------------	--	--

TASKS:

1. Opening and closing valves.
2. Verifying that pump is properly aligned.
3. Starting seal water.

NOTE
The downstream fume scrubber operation is on-line.

	Steps	Key Points	PPE/Hazards
1.	Verify the low point drain valves to trench are closed.	Field operator.	
2.	Verify that one of the discharge lines from Rock Slurry pumps on top of the reactor is open.	When starting out on a low rate, it may be beneficial to only open one valve on cell #1.	
3.	Verify that the suction and discharge valves of the Rock Slurry pump being used as the inline spare are closed.	Field Operator verification.	
4.	Verify the valve for the stand by pump at the "Y" where both rock lines come together is closed and the other is opened.	Field Operator verification.	
5.	Adjust the Rock Slurry pump to be put in-service to minimum speed.	DCS control and verify.	

NOTE
Ensure the pump packing water is on and the flow is being maintained appropriately. Field check and DCS control.
Verify with DCS to ensure the pump packing water is on. Visually check in field.

6.	Open seal water automatic valves.	Field check.	
7.	Verify there is a permit on the seal water.	This is done by communicating with	

Normal Start-up of the Rock Slurry Pump

		the DCS operator, and checking the field.	
8.	Start the selected Rock Slurry pump.	The suction could be plugged. Blow back with air or water, if needed.	
9.	Adjust Rock Slurry flow as needed.	DCS controlled.	



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Start-up of the Marble Pump

PHOS, Normal Start-up-01 02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform normal start-up of the Marble pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents:

Tools and Equipment: Air hose, ladder, radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear.	<ul style="list-style-type: none">• Hot slurry• Equipment damage	<ul style="list-style-type: none">• Slurry needs to stay in contained area.• Slurry is corrosive.

Normal Start-up of the Marble Pump

TASKS:

1. Starting the Marble pump.
2. Opening, closing valves.
3. Inspecting lines, valves, and the pump.

Steps		Key Points	PPE/Hazards
1.	Verify all switch gears are racked in.		
2.	Verify that all drain valves and bleed valves are closed.	The drain valve and bleed valve are on the bottom floor suction side of the pump.	
3.	Verify that the clean out valve above the baro condenser tank is closed.		
4.	Verify that DCS is ready for the Marble pump.		
5.	Open the suction and discharge valves on the Marble pump.	Opening the discharge valve should be ok with the veri-drive.	
6.	Set the vari-drive in manual at 10%-20% pump speed.	To be done by DCS.	
7.	Start the Marble pump.		

NOTE

If the Marble Pump is being back flushed, set the vari-drive at 100%.

NOTE

If the plant raw water pressure drops below 25# psi, the Marble Pump will shut down.

8.	Adjust vari-drive as needed to control flow.		
9.	Inspect the line for leaks.		
10.	Inspect pump for noise, vibration, and problems.		
11.	Adjust pump speed for desired set point.	DCS controlled.	



Conda Phosphate Operations

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Conda Phosphate Operations
Standard Operating Procedures

PHOS
(Front End and Filters)

Normal Start-up of Pond Return Pumps

PHOS, Normal Start-up-01
02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step- by -step instruction on how to perform the normal shutdown of the Pond Return System.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified. Must be B-Filter certified.

Required Documents: Procedures for Normal Start-up of Pond Supply Pumps.

Tools and Equipment: Radio communication, hydraulic pack.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 	<ul style="list-style-type: none"> • Chemical burns 	<ul style="list-style-type: none"> • Pond water needs to be contained.

Normal Shutdown of the Pond Return System

TASKS:

1. Start the barometric condensers return pump.
2. Start the Death Row Return pumps.
3. Open and close valves.

NOTE

Start the Return Pond Supply pumps when the barometric condenser tank and the north seal tank start to get a level in them.

Steps	Key Points	PPE/Hazards
1. Start the east dilution cooler return pump. Leave in auto.	This pump is on a veri-drive. For level control in the north seal tank. It also can only be started and stopped from the old gyp booster veri-drive in the north MCC.	
2. Start the barometric condenser return pump by: 2.1 Open suction valve. 2.2 Restrict discharge valve ¼ open. 2.3 Start barometric pump. 2.4 Verify level controller is in auto.	DCS will notify the A-Filter Operator when to start the pump.	

NOTE

As the Shifter brings on the last two pond supply pumps, bring on the pond return pumps. When starting return pumps, always close the discharge valve before starting pump. Verify that the pump is not spinning backwards.

3. Start the west, center, and east pond return pumps.		
4. Start the west dilution cooler pond return pump.		
5. Restrict the pond supply bypass valve.	As needed for pressure increase. If cold, leave this valve 1/8 or more open to prevent freeze-ups.	

Normal Shutdown of the Pond Return System

NOTE

When starting the west dilution cooler pump, it is necessary to verify that it is lined to return header. (Or start the wash water on the 24-C)

Training Notes:

1. The west dilution cooler is subject to change as far as being the supply water to the 24-C.
2. The start/stop on the east dilution cooler is subject to change location.

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Start-up of Nash Seal Water to North Sulfuric

PHOS, Start-up-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform initial start-up of Nash Seal Water to North Sulfuric.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents: N/A

Tools and Equipment: N/A

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 	<ul style="list-style-type: none"> • Over pressuring lines • Line failure 	

Normal Start-up of Nash Seal Water to North Sulfuric

TASKS:

1. Charging lines.
2. Filling tank.
3. Starting Pump.
4. Opening and closing valves.

Steps		Key Points	PPE/Hazards
1.	Close all drain valves from Nash Pump to North Plant.	There are 3 total valves.	
2.	Open level control valve.	This valve is on the discharge line. This valve will close if conductivity gets too low.	
3.	Open suction and discharge valves on Nash pump.		
4.	Verify Nash tank has a level in it.	This needs to be done at DCS, and visually in the field.	

NOTE

Notify North Sulfuric before starting pump.

5.	Start Nash pump to North Sulfuric.	This can only be done in the field.	
6.	Visually verify piping has no leaks.		

CAUTION

Bleed valve needs to be open to neutralization sump by the presser control valve at all times. This prevents freeze-ups.



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Startup of the Process Sewer

PHOS-Startup-01
02/26/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal start-up of the Process Sewer.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be familiar with this system and its procedures.

Required Documents:

Tools and Equipment:

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 	<ul style="list-style-type: none"> • Chemical burns 	

Normal Startup of the Process Sewer

TASKS:

1. Put Process Sewer in service.

NOTE

The Switchgear for the Process Sewer is in the New North MCC.

Steps		Key Points	PPE/Hazards
1.	Verify that the 4" Grinnell Valve is open.	On the Spill Back Line.	
2.	Verify that Isolation Valve is open.	Valve is located behind the E&I Shop. Valve is usually never closed unless it needs to be locked out.	

NOTE

The level in the sump needs to be over the Pump Bowl.
The level controller is located outside of the building on the north side.

3.	Start the Process Sewer Sump Pump.	Start/Stop Controller is located just inside of building on the right.	
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Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Start-up of the Gyp Sump – Old PHOS

PHOS, Normal Start-up-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/16/2005

Objective: To provide operating personnel with step- by -step instruction on how to perform the normal star-up of the Gyp Sump in old PHOS.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be familiar with system. Must be DCS Operator certified. Must be B-Filter certified.

Required Documents: Procedures for normal Gyp Disposal Pump Start-up. Normal start up of the pond return system.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Equipment damage• Thermal burns• Chemical burns	<ul style="list-style-type: none">• Needs to be kept in contained area.• Corrosive.

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Normal Start-up of the Gyp Sump – Old PHOS

- | | | |
|------------------------|--|--|
| • Safety toe footwear. | | |
|------------------------|--|--|

TASKS:

1. Put the Gyp Sump in service.
2. Start the Gyp pump.
3. Checking the seal water.
4. Start the agitator.
5. Starting the make-up water.
6. Checking bubble tube.
7. Checking the discharge.

NOTE

This procedure is base on if the Gyp Sump is empty. However, the procedure should be followed as if there is already a level in the gyp sump.

Steps		Key Points	PPE/Hazards
1.	Verify that the switchgear is unlocked for the Gyp pump to be used.	Field operator.	
2.	Verify that the switchgear is unlocked for the Gyp sump agitator.	Field operator.	
3.	Verify that the pond return water system is in service.	Field Operator. This is the supply water for the level control.	
4.	Verify that the Gyp Sump pump seal water is on.	Field Operator. Make sure that the pump is actually getting water.	
5.	Verify that the Gyp Sump pump discharge valve seal water is on.	Field Operator. Make sure that the pump is actually getting water.	
6.	Verify that the Gyp Sump pump discharge valve is working properly.	Field Operator. Air actuator is located on east wall.	
7.	Set gyp sump level controller in automatic at desired set point.	DCS Operator. Opens the valve all the way if sump is empty.	

Normal Start-up of the Gyp Sump – Old PHOS

<p>NOTE</p> <p>Level in gyp sump has to be above agitator before starting.</p>

8.	Start the agitator.	Field Operator. Start/Stop station is located on 24-C filtrate pump deck control panel.	
9.	Verify that discharge valve is closed.	Can only be done In the field.	

<p>CAUTION</p> <p>The Gyp Disposal System has to be in service before starting the Gyp Sump pump.</p>

10.	Start the Gyp Sump pump.	Can only be started in the field. DCS has stop only. Communicate with DCS.	
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<p>NOTE</p> <p>Discharge valve has field capabilities only.</p>

11.	Slowly open discharge valve.	By actuator located on east wall. Communicate with DCS in order for them to watch the gyp tank.	
12.	Align the floor sump to the gyp sump.	Field Operator. Valve is located east of floor sump.	
13.	Align the grade control sump pump to the gyp sump.	By opening the valve, or unlocking the switchgear, and racking in.	
14.	Start Spray Bar pump.	When ready.	

Normal Start-up of the Gyp Sump – Old PHOS

NOTE

DCS can stop only the 24-C Spray Bar pumps.

15.	Open sluice water valves.		
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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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Shut Downs

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Shutdown of the Rock Slurry Pump

PHOS, Shutdown-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal shutdown of the rock slurry pumps.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents:

Tools and Equipment: Channel locks, hammers, 3" cam lock to 3/4" reducer, and/or 3" to fire hose fitting reducer, 40' of 3/4" hose, fire hose.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Line plugging off with rock slurry,• The rock settling out of the water in the rock slurry tank.	

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Normal Shutdown of the Rock Slurry pump.

• Safety toe footwear.		
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TASKS:

1. Shutdown the Rock slurry pump
2. Open and close valves.
3. Flush the Rock slurry lines.
4. Steps to prevent freeze ups.

NOTE

This procedure is under the assumption that the sulfuric pump is off, or sulfuric valves are closed to the Reactor.

DCS Needs to notify the Ball Mill, North Sulfuric, PPA, and Granulation.

If the power is lost for an extended time with slurry in the system, turn the agitator and pump every hour by hand while agitating. Need to hook up the portable air compressor into plant air lines at PHOS air compressor

Steps		Key Points	PPE/Hazards
1.	Shutdown the Rock Slurry pump.	The suction valve should automatically close. DCS controlled.	
2.	Verify that the suction valve is closed.	Verified by DCS and Field.	
3.	Verify that the seal water valve is closed.	The seal water should automatically close. Verified by DCS and Field.	
4.	Verify that discharge valve is open.	Needs to be open to rinse with water and blow with air. DCS Operator.	
5.	Open the drain valve on the suction side of the pump.	Done in the field.	
6.	Hook water up to the wash valve above #5 cell.	Would be best to use the 2" utility line just northwest of #5 agitator. Done by Field Operator.	
7.	Close the valve at the "Y" on the Rock Slurry line to be flushed.	Field operated valve.	

Normal Shutdown of the Rock Slurry pump.

8.	Start the water that was hooked to the flush line and flush back towards the pump.	Flush long enough to ensure that the line is clean. Field Operator verified.	
9.	Stop the flush water.	Field Operator verified.	
10.	Hook air up to the wash valve above cell #5.	Field Operator verified.	
11.	Blow air back through to the pump.	Field Operator verified.	
12.	Open the seal water automatic.	This is to prevent freeze-ups in cold weather. Done by the Field and DCS Operators.	

NOTE

Once the air is of, it would be best to open the valve at the "Y" on the rock line above cell #5.



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal shutdown of the Phos Scrubber.

PHOS-SHUTDOWN-01 02/24/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step by step instruction on how to shutdown the Phos Scrubber.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. DCS certified, B-Filter certified.

Required Documents: Procedures to be followed to shutdown the Phos Scrubber.

- Normal shutdown on the Front end Reactor,
- Normal shutdown of the Belts, and the 24-C filters.

Tools and Equipment:

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear.	<ul style="list-style-type: none">• Chemical burns.	<ul style="list-style-type: none">• Pond water needs to be kept contained.• Within 24 HRS a DEQ will need to be filled out if scrubber is down.

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Normal shutdown of the Phos Scrubber.

TASKS: List ALL tasks within this procedure.

1. Perform a normal shutdown.
2. Shutdown the Scrubber fan
3. Stop the Scrubber pumps.
4. Close and open valves.

NOTE

Any time the scrubber is down a DEQ (Department of Environmental Quality) will need to be filled out. You have 24 hours after to do this.

Depending on the nature of the shutdown, the following steps may not always stay in sequence. Here is a list of equipment that will need to be shutdown when the scrubber goes down.

- Phos Reactor
- Filters

	Steps	Key Points	PPE/Hazards
1.	Shutdown the Scrubber fan	Can be done in the field as well as DCS.	
2.	Closes the Louvers on the Scrubber Fan.		

NOTE

The following steps only need to be followed if the whole scrubber is to be shutdown for entry, maintains work, or any other situation.

When the pond system needs to be shutdown, shutdown of the scrubber fan may be the only equipment that will need to be shutdown.

The raw water system and the pond water system on the scrubber need to be drained or left bleeding to prevent freeze ups.

When shutting off the Pond Water to the Scrubber, the Pond Water Pressure will increase.

3.	Close the pond water automatic.	DCS will slowly close the valve. If needed, bleed line to prevent freeze-ups.	
4.	Shutdown the raw water to the 3 rd stage suction piping.	Can be done by automatic, or in the field. If needed, bleed line to prevent freeze-ups.	

Normal shutdown of the Phos Scrubber.

5.	Close the valve on the head tank dump line.	This valve is on top of the scrubber. This step will isolate the flow to the head tank when the tank fills up.	
6.	Shutdown the 1 st stage pump.	Can be done in the field as well as DCS. Open Drain Valve and drain, if needed.	
7.	Shutdown the 2 nd stage pump.	Can be done in the field as well as DCS. Open Drain Valve and drain, if needed.	
8.	Shutdown the 3 rd stage pump.	Can be done in the field as well as DCS. Open Drain Valve and drain, if needed.	
9.	Shutdown the void pump.	Can be done in the field as well as DCS. Open Drain Valve and drain, if needed.	
10.	Shutdown the blow down pump.	The pump may need to be shut down earlier depending on the level in the scrubber. Can be done in the field as well as DCS. Open Drain Valve and drain, if needed.	

NOTE

In case of cold weather when Scrubber will be down for a long period of time, it would be beneficial to drain the Head Tank before shutting down the Blow Down Pump.

Normal shutdown of the Phos Scrubber.

NOTE

Here is a list of all the equipment areas the scrubber ducting is plumed to;

- 24-C filtrate tanks.
- 24-C filter& Gyp chute
- Belt filters filtrate tanks.
- All cells on the Reactor.
- Gyp sump.
- Gyp tank.
- North seal tank.
- Tank 12
- DB Box.
- #1 LGS.
- All of Grade control.

Training Notes:

1. The seal water should be left in-service, unless it needs to be prepared for maintenance.
2. If pond water is down, and the raw water is still in-service it will be ok to keep the blow-down pump running.



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Shutdown of the Pond Return Pumps

PHOS, Normal Shutdown-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step- by- step instruction on how to perform a normal and emergency shutdown of a return pond or return pumps.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified. Must be B-Filter certified.

Required Documents: Procedures to refer to when shutting down the pond supply system are;

- Short-term shutdown of the Evaps.
- Normal shutdown of the Front end Reactor
- Normal shutdown of the belt and, 24-C filters
- Normal shutdown of the Gyp disposal and Gyp sump.
- Normal shutdown of the Phos Scrubber.

Tools and Equipment: Radio communication. Hydraulic pack.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear.	<ul style="list-style-type: none">• Chemical burns	<ul style="list-style-type: none">• Pond water needs to be kept contained.

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Normal Shutdown of Pond Return Pumps

TASKS:

1. Shut down a return pump.
2. Shut down the return pumps.
3. Open /close valves manually or with hydraulic pack.

NOTE

Hydraulic pack should be ready and hooked up to the valves.
All equipment that is serviced by pond water needs to be taken out of service.
Here is a general list, and may not always apply.

- A, B, C, and #8 Evaps
- #8 seal tank
- Reactor (Flash coolers)
- Filters
- Both gyp systems.
- Phos scrubber.

Steps		Key Points	PPE/Hazards
1.	Shut down a return pump by: 1.1 Shut down return pump. 1.2 Close the suction discharge valve. 1.3 Open drain valves.	To prevent freeze-ups, it may be necessary to crack open the discharge or suction valve to let water flow through pump.	

NOTE

The following steps will take affect when the pond supply system goes down. Anytime A pond return pump is shut down, isolate by closing the suction and discharge valves and open drains.
PPA cake slurry can be aligned to the north seal tank; this will need to be shutoff or removed if aligned to the north seal tank.

2.	Shut down the west dilution cooler pump.	As DCS dictates. Refer to 24-C shutdown procedures	
3.	Isolate.		
4.	Open drain valves.		
5.	Shut down the east, center, and west return pumps.	As DCS dictates.	
6.	Isolate.		

Normal Shutdown of Pond Return Pumps

7.	Open drain valves.		
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NOTE

If pond supply pumps are only to be down for a short time, it is not necessary to shut down the east cooler dilution pump. It is on a vary drive and ran off of a level control.

8.	Shut down the east dilution cooler pump.	Only if applicable.	
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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Shutdown of the Gyp Disposal System

PHOS, Shutdown-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step -by -step instruction on how to perform a normal shutdown of the Gyp Disposal System.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents: Procedures for the Normal Shutdown of the Gyp Sump Pump.

Tools and Equipment: Radio communications.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear.	<ul style="list-style-type: none">• Thermal burns• Chemical burns• Equipment damage	<ul style="list-style-type: none">• Gyp slurry needs to be kept in containment area• Gyp slurry is corrosive.

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Normal Shutdown of the Gyp Disposal System

TASKS:

1. Shutdown the Gyp Sump pump.
2. Shutting off the Gyp Disposal pump.

Steps	Key Points	PPE/Hazards
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NOTE

PPA cake slurry can go to the north seal tank.
 It will be important that they do not send a lot of solids, this could plug up our return pond pumps.
 As well as the spray bars when put into service.

1.	Notify PPA to shutdown cake slurry.	Or swap to the north seal tank.	
2.	Verify that PPA cake slurry is down.	Check flow meter on DCS.	
3.	Shutdown the Gyp Sump pump.	B-Filter Operator. Refer to Normal Shutdown of the Gyp Sump Pump.	
4.	Close the supply valve to the vacuum scrubber spray.		
5.	Close the supply valves to both #1 and #2 belt sluice water.		
6.	Verify that the High Pressure Cloth Wash pump is off.	DCS controlled.	
7.	Close the supply valves to the High Pressure Cloth Wash sprays.	#1 and #2 belts.	
8.	Close the supply valve to the belt lube.	#1 and #2 belts.	
9.	Close the supply valve to the floor sprays.	#1 and #2 belts.	
10.	Put switch in the "off" position on the North Floor sump.	If there is excess water going to the sump, it will not keep pumping to the gyp tank.	

Normal Shutdown of the Gyp Disposal System

NOTE

Let all of the flows drain to the gyp tank that was isolated in the previous step. This will allow time to flush the gyp tank and the gyp lines with pond water.
If gyp tank fills up, it may be necessary to start the Gyp Disposal pump back up temporarily and pump the level back down.

11.	Shutdown the Gyp Disposal pump by: 11.1 Setting level controller in manual and close. 11.2 Letting level drop to about 5%. 11.3 Shutting down Gyp Disposal pump.	DCS Operator. May be necessary to manually close the manual valves on the level control supply lines.	
12.	Shutdown the Seal Water Booster pump.		
13.	Close the seal water supply valve.		

NOTE

With the new containment around the scrubber, there should not be a problem with flooding in the area. It is still possible to flood out the west bay door by #8 filtrate pump.

14.	Drain the gyp line by: 14.1 Opening the suction valve. 14.2 Opening the discharge valve.	This lets the water in the gyp line drain back to the gyp tank and over flow on to the over flow.	
15.	Verify that the supply valve to flush the gyp line is closed.	Located on the filter vacuum deck.	

NOTE

If it is not necessary to drain the gyp tank, close the suction valve ONLY. Leave the discharge valve open.

16.	Drain the suction piping and the Gyp Disposal pump by: 16.1 Putting the flush system in the flush mode. 16.2 Verifying that the valve is open and not plugged.	When the flush supply valve is closed, suction and part of the discharge piping can drain. This will also drain the gyp tank.	
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Normal Shutdown of the Gyp Disposal System

17.	Drain the gyp tank by: 17.1 Opening the suction valve. 1.2 Continuing to drain out flush valve.		
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Conda Phosphate Operations

**OPERATIONS PROCEDURE
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Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Shutdown of the Process Sewer

PHOS-Shutdown-01
02/26/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal and emergency shutdown of the Process Sewer.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be familiar with this system and its procedures.

Required Documents:

Tools and Equipment:

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear.	<ul style="list-style-type: none">• Chemical burns	

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Normal Shutdown of the Process Sewer

TASKS:

1. Shutdown the Process Sewer Sump Pump.

	Steps	Key Points	PPE/Hazards
1.	Shutdown the Process Sewer Sump Pump.	Start/Stop Station is located inside of building just to the right of the door.	

NOTE

The following steps will not always be applicable. Depends on the situation.

2.	Reduce or stop flows to the Process Sewer.	To keep from filling up the sump.	
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Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Shutdown of the PHOS Reactor

PHOS, Normal Shutdown-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step- by-step instruction on how to perform the short-term shutdown of the Reactor.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS Operator certified. Must be A-Filter certified.

Required Documents: Procedures to be used: Normal Shutdown of the Rock Slurry Pump, Normal Shutdown of the Belt Filters, Normal Shutdown of the 24-C Filter.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear• Saranex suit• Face shield• Rubber gloves• Rubber boots	<ul style="list-style-type: none">• Over pressuring lines• Over heating the Reactor	<ul style="list-style-type: none">• Over filling of the Rector• Acid spills• Pond water• Gypsum spills• Slurry spills

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Normal Shutdown of the Reactor

TASKS:

1. Shutdown rock slurry pumps.
2. Shutdown sulfuric acid.
3. Shutdown the filtration system.
4. Shutdown flash coolers.

NOTE

The Sulfuric pump may already be running if Granulation is running 16-20-0.

The Sulfuric pump is set up to shut "off" if DAP is using less than 10 gallons per minute when the PHOS Rock Slurry flow is under 400 pounds of rock per minute.

Notify the Wash Plant and the North Sulfuric Plant when shutting down the Reactor.

CAUTION

If there is an unexpected shutdown, it will be important to notify the North Plant of the situation.

	Steps	Key Points	PPE/Hazards
1.	Close the sulfuric automatic flow control valve or have B-5 boiler area shut down the sulfuric pumps.	The sulfuric pump is interlocked to shut down at a minimal flow of 10 GPM.	
2.	Shut down the Rock Slurry pump.	Refer to Normal Shutdown of the Rock Slurry Pumps.	

NOTE

In case of power loss, it may be necessary to hook up the portable air compressor to the PHOS air compressor to get air for blowing lines.

3.	Verify that the suction valve on #1 Rock Slurry pump is closed.	If rock pump is down for a long period of time, the Rock Slurry pump will need to be rinsed and drained to prevent pluggage or freeze-ups. No longer	
----	-----------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------	--

Normal Shutdown of the Reactor

		that 4 hours.	
4.	Shut down Filtration Systems, #1 Belt, #2 Belt, and 24-C.	Refer to Normal Shutdown of the Filter System.	
5.	Reduce the vacuum on the flash coolers by: 5.1 Cutting barometric water. 5.2 Opening vacuum brakes.	If rock and sulfuric are down long enough, the digester is losing temp. Start shutting down flash coolers to help. Cut scrubber back, if applicable.	
6.	Circulate the clarifier under flows back to themselves.	30 clarifiers of course.	

<p>NOTE</p> <p>Depending on the time of the year, it may be necessary to use air to blow out both U/F lines to the Reactor.</p>



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Shutdown of the 24-C Filter

PHOS, Shutdown-01 02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal shutdown of the 24-C.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. DCS certified, B-Filter certified.

Required Documents:

Tools and Equipment: Radio communication, channel locks, hammers, nuts and bolts, and gaskets.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Thermal burns• Pinch points• Over pressuring lines	<ul style="list-style-type: none">• Acid spills.• Acid needs to be kept in containment area.

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Normal Shutdown of the 24-C

- | | | |
|------------------------|--|--|
| • Safety toe footwear. | | |
|------------------------|--|--|

TASKS: Temporarily tacking the 24-C out of service.

Steps		Key Points	PPE/Hazards
1.	Shut off the steam to wash water.		
2.	Shut down the 24-C Filter Feed pump.		
3.	Shut down the floc to the filter feed.	This is interlocked to the feed pump.	
4.	Shut down the Primary Vacuum pump.	Once the vacuum is broken.	
5.	Shut down the Cake Dry Vacuum pump.	Once the vacuum is broken.	
6.	Shut down the Cake Wash pump or west cooler dilution pump.	Use DCS if using cake wash. Done in field if using west cooler dilution.	

<p>NOTE</p> <p>It may be beneficial to dilute the filtrate tanks before shutting the wash water and filtrate pumps down. Refer to 24-C wash procedures.</p>

7.	Shut off the #1 through #4 Filtrate pumps.	This is done after all wash and feed are off and tanks are starting to go empty.	
8.	Shut off the discharge blower.	If applicable.	
9.	Shut off the steam to the discharge blower	If applicable.	

<p>NOTE</p> <p>All of the cake needs to be cleared off of the pans, before shutting down the drive.</p>

10.	Stop the filter drive.		
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NOTE

Lock out all necessary equipment as needed, and generate work orders as needed.



Conda Phosphate Operations

**OPERATIONS PROCEDURE
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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Shutdown of the Nash tank

PHOS, Shutdown-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step- by- step instructions on how to perform the normal shutdown of the Nash pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be familiar with the Nash System.

Required Documents:

Tools and Equipment: Radio, air hose, safety clips.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Line failure• Equipment damage	

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Normal Shutdown of the Nash Pump

<ul style="list-style-type: none"> • Safety toe footwear. 		
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TASKS:

1. Stopping the Nash pump.
2. Open and close valves.

	Steps	Key Points	PPE/Hazards
1.	Notify North Sulfuric when shutting down the Nash water.	Water to the vac units. DCS Operator.	
2.	Shut down the Nash pump.	Can be done by DCS or locally. DCS must be aware of the shut down of the pump.	

NOTE

In cold weather, blow water out of the line to prevent freeze-ups.

3.	Verify with North Plant Operator who will blow out the line.	Different situations will predict which way to blow out line. DCS Operator.	
4.	Close suction valve on Nash Pump.	Field Operator.	
5.	Verify that the level control valve in PHOS is open.	Automatic just off of pump. Can be done by DCS.	
6.	Open drain valve.	Between suction valve and Nash pump. Field Operator.	
7.	Blow out line.	From the North Plant or from PHOS Field Operator.	

Normal Shutdown of the Nash Pump

NOTE

If blowing air from the North Sulfuric Plant, the pressure control valve needs to be open.
If blowing air from PHOS, the pressure control valve has to be open.

8.	Verify that the pressure control valve is open or closed.	Depending on which direction the lines is being blown out. DCS Operator.	
9.	Verify that the line is blown clear or has air coming through it.		



Conda Phosphate Operations

**OPERATIONS PROCEDURE
ACKNOWLEDGEMENT**

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

Normal shutdown of the 24-C Horizontal feed pump

PHOS-Startup-01

06/26/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform a normal shutdown of the 24-C Horizontal feed pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. But coordinated through the field operators first and accordingly.

Required Documents: Normal shutdown of the 24-C filter.

Tools and Equipment: Radio communication, Hydraulic unit.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear	<ul style="list-style-type: none">• Thermal burns• Chemical burns	<ul style="list-style-type: none">• Pond water, filtered acid, and filter feed need to be kept in containment area.

TASKS:

1. Take the 24-C Horizontal feed pump out of service
2. Drain the piping and pump to prevent plugging the pump and line.

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Normal shutdown of the Horizontal feed pump.

Steps		Key Points	PPE/Hazards
1.	Shutdown the 24-C Horizontal feed pump.	Done by DCS operator.	
2.	Close the suction valve.	B valve (Clarkston) To be done with a hydraulic pack.	

NOTE

If the 24-C Horizontal feed pump is down more than 20 minutes it will need to be flushed, and drained.

3.	Open wash valve on the suction side of the 24-C Horizontal feed pump.		
4.	Instruct the A filter operator to send some flush water or align #2 filtrate to the feed line off of the recycle header.	Refer to putting 24-C filter on wash normal operation.	
5.	Verify that there is flow through the flow meter.	To be done by DCS	
6.	Flush for at least five minutes.	Unless using for filter wash	
7.	Once flush water or wash water is off open the drain valve on suction side of the pump and drain the line.	This includes the flush line also. To prevent line from freeze ups.	
8.	Close the flush valve on the suction of the pump.		

NOTE

If the suction piping plugs use flush water to blow back in to the reactor.
Use a water blaster and blast through the rod out ports.

When rodding out the suction piping use proper PPE. Face shield, rubber boots, serenex suit, and rubber gloves.

Training Notes:

1. The clean out of the suction piping will need trial and error to ensure proper clean out. Use common sense and good judgment.
2. Do to the fact that this is new equipment there will need to be a SAFE PLAN OF ACTION filled out when rodding out or water blasting through rod out ports.
3. Once there a system established through a safe plans of action then we can update the procedures.

Normal shutdown of the Horizontal feed pump.

Agrium

Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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Conda Phosphate Operations Standard Operating Procedures **PHOS** (Front End and Filters)

Normal Shutdown of Pond Supply Pumps

PHOS, Normal Shutdown-01 02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step- by -step instruction on how to perform the normal shutdown and/or emergency shutdown of the Pond Supply Pumps.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be Shifter certified or Upgrade Lead man.

Required Documents: Procedures to refer to when shutting down the pond supply system are;

- Short-term shutdown of the Evaps.
- Normal shutdown of the Front end Reactor
- Normal shutdown of the belt and, 24-C filters
- Normal shutdown of the Gyp disposal and Gyp sump.
- Normal shutdown of the Phos Scrubber.

Tools and Equipment: Radio communication, pipe wrench, cell phone, and truck.
(Plenty of gas)

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Rupturing pond water lines• High voltage starters• Possibility of diluted acid burns from pond	<ul style="list-style-type: none">• Contain any pond water spills• Proper reporting of a pond water spill.

Page 1 of 3

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Normal Shutdown of Pond Supply Pumps

<ul style="list-style-type: none"> • Safety toe footwear. 	water	
--------------------------------------------------------------------------	-------	--

TASKS:

1. Open and close hydraulic valves.
2. Open and close 2" bleed valves.
3. Open and close gate valve.
4. Stopping starters. (motor & breaker)
5. Checking lines and flanges for leaks.

NOTE

Before shutting down Pond Supply pumps, notify the DCS Operator with radio or cell phone to be sure they are ready for the pond water to be shut down. If ready, let them know that pumps are ready to shut down.

All equipment that is serviced by pond water needs to be taken out of service.

Here is a general list, and may not always apply.

- A, B, C, and #8 Evaps
- #8 seal tank
- Reactor (Flash coolers)
- Filters
- Both gyp systems.
- Phos scrubber.

If DCS shuts down Pond Supply pumps, the Shifter still needs to go to the pond and verify that the pumps did shut down.

	Steps	Key Points	PPE/Hazards
1.	Shut down east and west Pond Supply pumps.	Shut down by remote from DCS. If a controlled shutdown, Shifter can do in the field.	
2.	Shut down the secondary Pond Supply pump.	Shut down by remote from DCS. If a controlled shutdown, Shifter can do in the field.	

Normal Shutdown of Pond Supply Pumps

NOTE

When shutting down Pond Supply pumps, leave all three sets of discharge valves open to let what pond water will drain back to PHOS plant.

In an emergency situation, notify Ball Mill, North Plant, North Sulfuric, East Sulfuric, DAP, and PPA that PHOS is down.

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Conda Phosphate Operations

**OPERATIONS PROCEDURE
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With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

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Agrium

Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Shutdown of the Uncontaminated Pump

PHOS, Shutdown-01 02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step by step instructions on how to perform the normal shutdown of the Uncontaminated pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified.

Required Documents:

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection		

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Normal Shutdown of the Uncontaminated Pump

• Safety toe footwear.		
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TASKS:

1. Shutting down the Uncontaminated pump.
2. Opening and closing valves.
3. Verifying.

NOTE
Water does not have to be isolated in the next step. Supervisor should be notified before letting the uncontaminated tank run over to the containment ditch.

	Steps	Key Points	PPE/Hazards
1.	Verify that all sources of water are isolated.	Filter vacuum pumps and Flash cooler vacuum pumps are the sources supply to the uncontaminated tank.	

NOTE
When tying a different water supply in to the PHOS scrubber and floc mix tank, the butterfly valve of the Uncontaminated pump discharge line to the floc mix tank needs to be closed.
Colder water to the floc mix tank will affect the aging time and could cause poor filtration.

2.	Verify that the floc mix tank has a different supply of raw water.	Tie the incoming raw water supply to the scrubber, which will supply water to the floc mix tank.	
3.	Verify that the PHOS scrubber has a different supply of raw water.	Tie the incoming raw water supply to the scrubber, which will supply water to the floc mix tank.	

Normal Shutdown of the Uncontaminated Pump

NOTE

The Nash tank might not get enough water when Uncontaminated pump is shutdown.
The manual make up valve may need to be opened.

4.	Shut down the Uncontaminated pump.	Can be done either in the field or by DCS. DCS needs to be notified when pump is shutdown.	
5.	Verify that the butterfly valve to floc mix tank and PHOS scrubber is closed.	Only if these two systems are in service.	
6.	Blow out line to the Nash tank.	Only if applicable.	



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Normal Shutdown of the Gyp Sump (Old Phos)

PHOS, Shutdown-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal shutdown of the Gyp Sump (Old PHOS).

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS Operator certified. Must be B-Filter certified.

Required Documents:

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection 	<ul style="list-style-type: none"> • Equipment damage • Thermal burns • Chemical burns 	<ul style="list-style-type: none"> • Slurry needs to be kept in containment area. • Slurry is corrosive.

Normal Shutdown of the Gyp Sump (Old PHOS)

• Safety toe footwear.		
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TASKS:

1. Shut down Gyp pump.
2. Stop all source of flow to gyp sump.
3. Closing valves.

Steps		Key Points	PPE/Hazards
1.	Verify that the feed has cleared, or is off of the filter.	Done by DCS and Field Operator.	
2.	Verify that the spray bar pump is off, and isolated.	DCS can only stop the pump. DCS can close the pressure control automatic valve, or Field Operator can manually isolate the pump.	
3.	Shut off the sluice water.	The spray bar pump is the supply source for the sluice water.	
4.	Align the floor sump to the north seal tank.	Valve located east of floor sump. Done by Field Operator.	
5.	Close valve or shut off grade control sump pump.	Valve is located east of 42% clarifier splitter box, at handrail level.	
6.	Verify that level controller is in auto.	This is the make-up water to the gyp sump from the return water system.	
7.	Shut off Gyp Sump pump.	DCS Operator needs to be notified.	
8.	Close Gyp Sump pump discharge valve.	Done by Field Operator.	



Conda Phosphate Operations

**OPERATIONS PROCEDURE
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Conda Phosphate Operations

Standard Operating Procedures PHOS

(Front End and Filters)

Normal Shutdown of the Marble Pump

PHOS-Shutdown-01

02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step- by- step instructions on how to perform the normal shutdown of the Marble pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified.

Required Documents:

Tools and Equipment: Radio communication, air hose, ladder.

Page 1 of 3

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Normal Shutdown of the Marble Pump

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear • Face Shield • Rubber gloves 	<ul style="list-style-type: none"> • Thermal burns • Equipment damage 	<ul style="list-style-type: none"> • Slurry is corrosive • Slurry needs to be kept in containment area.

TASKS:

1. Closing and opening valves.
2. Draining the line.

Steps	Key Points	PPE/Hazards
1. Shut down the Marble pump.		
2. Close the suction valve.		
3. Lock, tag, & try.	If applicable.	
4. Open bleed on suction side of pump.	There may be a chance of splashing.	Face Shield, Rubber gloves.
5. Verify bleed is not plugged.	If applicable.	
6. Open the drain valve.	If applicable. There may be a chance of splashing.	
7. Drain the Marble pump and line.	If applicable. There may be a chance of splashing.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Normal Shutdown for the Belt Filtration Systems

PHOS, Shutdown-01 02/07/03

Reviewed by: Richard Hymas

Date: 2/15/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal shutdown for the Filtrations Systems.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified and A-Filter certified.

Required Documents:

Tools and Equipment: Radio communication,

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection	<ul style="list-style-type: none">• Cavitations of pumps or agitators• Thermal burns• Pinch points	<ul style="list-style-type: none">• Acid spills• Acid needs to be kept in containment area.

Normal Shutdown of the Filtration Systems

• Safety toe footwear.		
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TASKS:

1. Temporarily shut the filter down.

	Steps	Key Points	PPE/Hazards
1.	Shut down the floc pump.		
2.	Shut down the Filter Feed pump.	#1 Belt /or #2 Belt Filter	
3.	Shut down the vacuum pump	For #1 belt filter and/or #2 Belt Filter Vacuum pump when the vacuum has broken or lost vacuum.	

NOTE
It may be beneficial to dilute the filtrate tanks before shutting the wash water and filtrate pumps down.

4.	Shut down the Cake Wash pump.	After the cake clears off of the cloth for #1 and/or #2 belt filter.	
5.	Shut down the Cloth Wash pump	After the cake clears off of the cloth for #1 and/or #2 belt filter.	
6.	Shutdown Filtrate pumps	For #1 belt filter and/or #2 belt filter. As long as the filtrate tanks do not run over.	
7.	Shut down the Transfer pump	Only if applicable. For #1 belt filter and/or #2 belt filter.	

Normal Shutdown of the Filtration Systems

NOTE

High-pressure cloth wash flow needs to be isolated before stopping the drive.
This has been known to cut the cloth if left running.

8.	Shut down the High Pressure Wash pump.	<p>Only if both belt filters are to be shut down! Isolate the line to #1 belt filter or the line to #2 belt filter.</p>	
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NOTE

For inspection, it may be beneficial to stop the belt where splice is, at the south end of the filter.

9.	Stop the filter drive	For #1 belt filter and/or #2 belt filter.	
10.	Shut down the Belt Support fan.	For #1 belt filter and/or #2 belt filter.	
11.	Shut down the belt Lube water.	Only if applicable. To the air deck atomizer, the vacuum pan lubrication system, and the slide deck	



Conda Phosphate Operations

**OPERATIONS PROCEDURE
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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Long Term Shutdown of the Nash tank

PHOS, Shutdown-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instructions on how to perform the long-term shutdown of the Nash pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified.

Required Documents: Procedures for Uncontaminated Pump Shutdown and Normal Shutdown of the Nash Pump.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection		

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Long Term Shutdown of the Nash Pump

<ul style="list-style-type: none"> • Safety toe footwear. 		
--------------------------------------------------------------------------	--	--

TASKS:

1. Shutdown the Nash pump.
2. Drain the Nash tank.
3. Isolate all incoming source of water.

NOTE
Notify the North Sulfuric Plant before shutting down the Nash Pump.

	Steps	Key Points	PPE/Hazards
1.	Shut down the uncontaminated pump.	Refer to the Shutdown of the Uncontaminated Pump. Notify DCS.	
2.	Isolate water off of the 24-C Nash pumps.		
3.	Isolate make-up water to the Nash tank.		
4.	Shut down Nash Pump.	This may need to be done sooner depending on level in Nash tank.	
5.	Drain the Nash tank by: 5.1 Removing the blank. 5.2 Opening drain valve between suction and pump.		
6.	Blow line clear of water.	To prevent freeze-ups, Refer to Normal Shutdown of the Nash Pump.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Long Term Shutdown for the Belt Filter Systems

PHOS, Shutdown-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to perform a long-term shutdown of the belt filters systems.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.
DCS certified, A-filter certified.

Required Documents: Procedures for of the Belt Filter Wash System.

Tools and Equipment: Radio communication, channel locks,

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear. 	<ul style="list-style-type: none"> • Thermal burns • Pinch points 	<ul style="list-style-type: none"> • Acid spills • Acid needs to be kept in containment area.

Long Term Shutdown of the Belt Filter Systems

TASKS:

1. Take one/or both of the Belt Filters out of service.

NOTE

Be sure that the feed line gets flushed pending on ambient Temperature, may need to blow out feed and floc line with air. Wash with either #6 and #9 filtrate, or flush line off of baro tank.

Steps		Key Points	PPE/Hazards
1.	Shut down the Transfer pump	Only if applicable. On #1 belt filter and/or #2 belt filter.	
2.	Shut down the Feed pump	To #1 belt filter and/or #2 belt filter.	
3.	Shut down the Vacuum pump	For #1 belt filter and/or #2 belt filter when the vacuum is broken.	
4.	Put #6 filtrate and/or #9 filtrate to the feed line to dilute down.	Refer to Procedure for Belt Filter Wash.	

NOTE

Before shutting down the cake wash pump check #5 or #8 specific gravity, (s.p.g) (1.100 desired)

5.	Shut down the Cake Wash pump	On #1 belt and/or #2 belt.	
6.	Shut down the Cloth Wash pump	On #1 belt and/or #2 belt.	
7.	Stop all filtrate pumps.	5, 6, and 7 for #1 belt filter and/or 8, 9, and 10 for #2 belt filter. As long as filtrate tanks do not run over.	

Long Term Shutdown of the Belt Filter Systems

NOTE

High-pressure cloth wash flow needs to be isolated before stopping the drive.
This has been known to cut the cloth if left running.

8.	Shut down the High Pressure Cloth Wash pump,	Only if both belt filters are to be shut down. Or isolate the line to #1 belt or #2 belt.	
9.	Shutdown the floor sprays.	On #1 belt filter and/or #2 belt filter by:	

NOTE

For inspection, it may be beneficial to stop the belt where splice is, at the south end of the filter.

10.	Shut down the filter drive.	To #1 belt and/or #2 belt.	
11.	Shut down the belt lube water.	To the air deck atomizer, the vacuum pan lubrication system, and the slide deck	
12.	Close the valve to sluice water.	Only if applicable. On #1 belt filter and/or #2 belt filter.	
13.	Blow air backwards through #5 and/or #8 filtrate lines.	If there is a chance of freeze-ups.	
14.	Blow air through floc line.	If there is a chance of freeze-ups.	
15.	Shut down 5, 6, and 7 and/or 8, 9, and 10 filtrate agitators.	Only if applicable.	
16.	Drain the tanks.	Only if applicable.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Long Term Shutdown of the 24-C

PHOS, Shutdown-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the long-term shutdown of the 24-C.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators.
DCS certified, A-Filter certified, B-filter certified.

Required Documents:

Tools and Equipment: Radio communication,

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear.	<ul style="list-style-type: none">• Thermal burns• Pinch points• Over pressuring lines	<ul style="list-style-type: none">• Acid spills• Acid needs to be kept in containment area.

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Long Term Shutdown of the 24-C

TASKS:

1. Take the 24-C out of service.

NOTE

Be sure that the feed line gets flushed pending on ambient Temperature may need to blow out feed line with air. Wash with #2 filtrate, or flush line off of baro tank.

	Steps	Key Points	PPE/Hazards
1.	Shut off steam to the wash water.		
2.	Shut off the Filter Feed pump.		

NOTE

Depending on outside temperatures, it may be necessary to blow out floc line to 24-C Feed line.

3.	Shut down the floc to the filter feed.		
4.	Shut off the #2 through #4 Filtrate pumps.		
5.	Once the vacuum has broken, shut down the Primary Vacuum pump.		
6.	Shut down the Cake Dry Vacuum pump.		
7.	Shut off the discharge blower.		
8.	Shut off the steam to the discharge blower.		
9.	Shut down #1 Filtrate pump	When tank specific gravity is at 1.100.	

NOTE

The West dilution cooler is stop only from DCS.

It may need to be tied in to the Return Header to help control the level in the North seal tank.

Long Term Shutdown of the 24-C

10.	Shut down the Cake Wash Pump or west dilution cooler pump.	Whichever system is being used.	
11.	Stop the filter drive.		

<p>NOTE</p> <p>Make sure all of the filter pans have been cleared of cake!</p>

12.	Shut off the spray bar pump.		
13.	Shut off the greaser.	Only if applicable.	
14.	Shut down #1 through #4 filtrate agitators.	Only if applicable.	
15.	Drain filter tanks.	Only if applicable.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Long Term Shutdown of the Gyp Sump (Old PHOS)

PHOS, Shutdown-01
02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the long-term shutdown of the Old Gyp Sump (Old PHOS).

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS Operator certified. Must be B-Filter certified.

Required Documents:

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection 	<ul style="list-style-type: none"> • Equipment damage • Thermal burns • Chemical burns 	<ul style="list-style-type: none"> • Slurry needs to be kept in containment area. • Slurry is corrosive.

Long Term Shutdown of the Gyp Sump (Old Phos)

• Safety toe footwear.		
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TASKS:

1. Stop all source of flow to Gyp Sump.
2. Closing valves.
3. Drain the sump.
4. Drain the discharge line.

	Steps	Key Points	PPE/Hazards
1.	Verify that the feed has cleared, or is off the filter.		
2.	Verify that the spray bar pump is off and valved in.	DCS can only stop the pump. Manually isolate the pump and drain to prevent freeze-ups.	
3.	Shut off the sluice water.	The spray bar pump is the supply source for the sluice water.	
4.	Align the floor sump to the north seal tank.	Valve located east of floor sump. Done by Field Operator. Drain line to Gyp Sump to prevent freeze-ups.	
5.	Close valve or shut off grade control sump pump.	Valve is located east of 42% clarifier splitter box, at handrail level. Blow line out to prevent freeze-ups.	
6.	Put level controller in manual and close.	Done by DCS.	
7.	Shut off gyp sump agitator.	Field Operator ONLY.	
8.	Shut down the gyp sump.	Done by DCS or Field Operator. When pump bowl is exposed.	
9.	Drain discharge line back to sump.	Field Operator.	
10.	Hose a sandpiper to sump.	Field Operator. Align to ditch in front of PHOS.	
11.	Pump sump out until it is empty.		Contact with acidic water.

			Rubber gloves.
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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS (Front End and Filters)

Long Term Shutdown of the Uncontaminated Pump

PHOS, Shutdown-01 02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instructions on how to perform the long-term shutdown of the Uncontaminated pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified.

Required Documents: Procedures to be used Normal shutdown of the Uncontaminated tank.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection 		

Long Term Shutdown of the Uncontaminated Pump

<ul style="list-style-type: none"> • Safety toe footwear. 		
--------------------------------------------------------------------------	--	--

TASKS:

1. Draining the uncontaminated tank.
2. Opening and closing valves.

NOTE
For a long-term shutdown, the water from the flash coolers and filter vacuum pump need to be isolated.

	Steps	Key Points	PPE/Hazards
1.	Isolated all sources of water to the uncontaminated tank.	The flash cooler vacuum pump and the filter vacuum pump.	

NOTE
When tying a different water supply to the PHOS scrubber and floc mix tank, the butterfly valve by pump on discharge side by the tee needs to be closed.
Colder water to the floc mix tank will affect the aging time and could cause poor filtration.

2.	Verify that the floc mix tank has a different supply of raw water.	Refer to normal shutdown of the Uncontaminated pump.	
3.	Verify that the PHOS scrubber has a different supply of raw water.	Refer to normal shutdown of the Uncontaminated pump.	

NOTE
The Nash tank may not get enough make-up water when Uncontaminated pump is shut down.

4.	Shut down the Uncontaminated pump.	Can be done either in the field or by DCS. DCS needs to be notified when the pump is shut down.	
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Long Term Shutdown of the Uncontaminated Pump

5.	Verify that the butterfly valve to the Floc mix tank and PHOS scrubber is closed.	Only if these tow systems are in service.	
6.	Blow out line to the Nash tank.	Only if applicable.	
7.	Drain the uncontaminated tank by: 7.1 Opening the drain valve.		



Conda Phosphate Operations

**OPERATIONS PROCEDURE
ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____

Agrium

Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Long Term Shutdown of the Marble Pump

PHOS, Shutdown-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the long-term shutdown of the Marble Pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be DCS certified. Must be A-Filter certified.

Required Documents:

Tools and Equipment: Radio communication, air hose, ladder.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear• Face shield	<ul style="list-style-type: none">• Thermal burns• Equipment damage	<ul style="list-style-type: none">• Slurry is corrosive• Slurry needs to be kept in containment area.

Page 1 of 3

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Long Term Shutdown of the Marble Pump

• Rubber gloves		
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TASKS:

1. Closing and opening valves.
2. Draining the line.

Steps		Key Points	PPE/Hazards
1.	Shut down the Marble pump.		
2.	Close the suction valve.		
3.	Lock, tag and try.	If applicable.	
4.	Open bleed on suction side of pump.	There may be a chance of splashing.	Face shield. Rubber gloves
5.	Verify bleed is not plugged.		Face shield. Rubber gloves
6.	Open the drain valve.		Face shield. Rubber gloves
7.	Drain the Marble pump and line.		Face shield. Rubber gloves
8.	Hook water up to the bleed on the suction side of the pump.	Only if applicable to flush line.	
9.	Close the drain valve.		
10.	Turn on the water.	Leave the water on for 10 or more minutes.	
11.	Turn off the water.		
12.	Open drain valve.		
13.	Drain rinse water out of the line and pump.	Repeat if necessary.	
14.	Remove water hose from bleed valve.		



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____

Agrium

Conda Phosphate Operations

Standard Operating Procedures

PHOS

(Front End and Filters)

Long Term Reactor Shutdown

PHOS, Long Term Shutdown-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the long-term shutdown of the reactor.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be A-Filter certified.

Required Documents: Procedures to be used: Rock Slurry Long Term Shutdown, Long Term Shutdown of the Marble Pump, Normal Shutdown of the Belt Filters, and Normal Shutdown of the 24-C Filter.

Tools and Equipment: Radio communication.

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Long Term Shutdown of the Reactor

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Hearing protection • Safety toe footwear • Saranex suit • Face shield • Rubber gloves • Rubber boots 	<ul style="list-style-type: none"> • Over pressuring lines • Thermal buns • Chemical burns 	<ul style="list-style-type: none"> • Acid Spills • Pond water • Gypsum spills • Slurry spills

TASKS:

1. Shutdown Rock Slurry pump.
2. Shutdown sulfuric acid.
3. Shutdown the flash coolers.
4. Shutdown agitators.
5. Filter down cells #1-#5 with a horizontal pump.
6. Filter down cells #6 and #7 with a horizontal pump.

NOTE

The Sulfuric pump may already be running if Granulation is running 16-20-0.

The Sulfuric pump is set up to shut "off" if DAP is using less than 10 gallons per minute when the PHOS Rock Slurry flow is under 400 pounds of rock per minute.

Notify the Wash Plant and the North Sulfuric Plant when shutting down the Reactor.

Steps	Key Points	PPE/Hazards
1. Close the Sulfuric automatic flow control valve	Or have B-5 Boiler Operator shut the sulfuric pumps down.	
2. Stop Reactor Rock Slurry pump.		

Long Term Shutdown of the Reactor

3.	Rinse and drain the rock slurry line by: 3.1 In cold weather, leave on the seal water. 3.2 Leaving the drains open on the suction side of the rock pump.	Refer to Rock Slurry Long-term shutdown.	
4.	Shutdown the vacuum pumps on the flash coolers	Shut down both vacuum pumps.	
5.	Cut back the barometric condenser water.	To brake vacuum	

NOTE

It will be necessary to use air to blow out both U/F Lines to the Reactor.

6.	Circulate both clarifiers under flows back to themselves.	Or just shutdown.	
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NOTE

Ambient temperatures may dictate to leave the water flowing through the lines until start-up of the system occurs.

7.	Verify that the Marble pump is down.	Refer to Long term Marble Pump Shutdown.	
8.	Stop the Flash Cooler Circulation pumps.		
9.	Grease the 36" hand control valve.		
10.	Isolate 36" Hand Control Valve, #1 Flash Cooler, and/or #2 Flash Cooler.	Let the level the flash coolers equalize with the Reactor first.	
11.	Drain the Flash Coolers by: 11.1 Cell #6 with the floor sump. 11.2 Using the Marble pump to the filters.	Refer to Normal start-up of the Marble Pump.	
12.	Flush the flash coolers with the barometric condenser pump.	Refer to Long-term Shutdown of the Flash Coolers.	
13.	Leave the Reactor agitators running.	Field Operator needs to monitor levels.	

Long Term Shutdown of the Reactor

14.	Cut back the Fume Scrubber dampers to the Reactor cells	To conserve on temperature. This may not be possible due to build up in scrubber ducts.	
15.	Shut down Filtration System.	Refer to Normal Shutdown of the Filter System. When the filter feed pumps lose prime in cells #6 & #7.	

NOTE

Turn Around or Entry Only:

Until permanent horizontal Filter Feed pumps are installed, there will be a temporary pump to filter down with, to which ever filter is applicable, To drain cells.
Filter of choice should be ready for service.

16.	Start the temporary Filter Feed pump.	Out of cells #1 through #5.	<ul style="list-style-type: none"> • Saranex suit • Face shield • Rubber gloves • Rubber boots
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NOTE

Field Operator will dictate Reactor level.
Shortly after the agitators are shut off, solids in the slurry will settle out.

17.	Shut down the reactor agitators.	#1 through #5 when the level gets close to the bottom blades.	
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NOTE

If filtering with belt filters, it will be critical to stand next to the filters after the agitators are shut down because the slurry will be so thin that it will slop off the end of the filter, causing problems.

Long Term Shutdown of the Reactor

18.	Repeat steps for cell #6 and #7.		<ul style="list-style-type: none">• Saranex suit• Face shield• Rubber gloves• Rubber boots
19.	Stop the temporary Filter Feed pump	When cells #1 through #7 are empty.	
20.	Close off the suction valves to #4 or #7 cells.		

NOTE

Make sure to flush the feed lines completely with pond water.

21.	Drain and isolate the Filter Feed pump.		
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Conda Phosphate Operations

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